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DETROIT

Flow

... THE MAGAZINE WHICH INTEGRATES MATERIAL HANDLING EQUIPMENT INTO THE FLOW OF PRODUCTION

MARCH
1948

SEE THE NEW
Packaging Mechanics Section
PAGE 31 →

NEW 1948 FLOW COST ANALYSIS CONTEST—See Page 17

Take a Tip— buy a ZIP!

P&H

ZIP-LIFT

HARNISCHFEGER CORP. MILWAUKEE, WIS.

WHY settle for anything less? The Zip-Lift is the real wire rope electric hoist — with full magnetic push-button control — and the top-notch qualities you'd expect only in the most expensive hoisting equipment.

If you have heavy loads (anything up to 2,000 lbs.) you can't lose with a Zip-Lift. It starts earning the moment you hang it up on hook, jib or trolley — pays for itself several times a year. Why postpone the savings it brings you? Add a new Zip to your production — now!

Ask for your copy of Bulletin H20-3. It covers everything you want to know about the P&H Zip-Lift — applications, pictures, specifications, etc.

These are Added Values!

SAFER—Control current is reduced to 110 volts at the push-button. Crane type limit switch and double brakes provide maximum safety.

LIFETIME CONSTRUCTION — Shaved gears — grease-sealed bearings — precision construction — moisture-proof, dust-proof, acid-proof.

SMOOTHER OPERATION — Motor specifically built for hoist service — high starting torque, frequent reversal, etc. Controls loads within a fraction of an inch.

ALERT SERVICE — Out-of-stock delivery from qualified dealers everywhere — backed by 18 branch offices and 8 conveniently located warehouses.

The Zip-Lift is America's fastest selling wire rope hoist.

Handle it "thru-the-air" at lower cost

P&H ELECTRIC HOISTS

4643 West National Avenue
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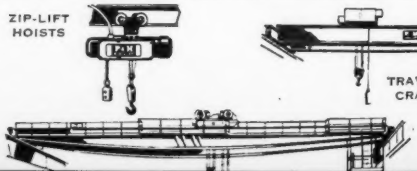
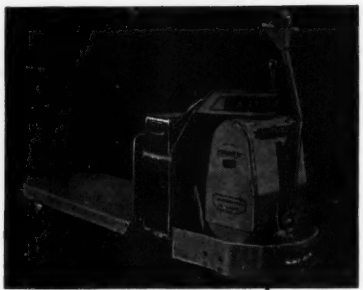


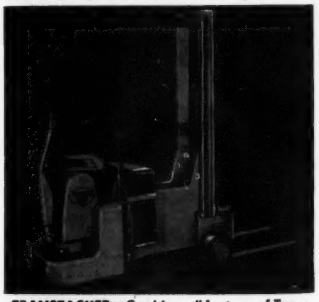
I'LL SAVE YOU HALF... Moving, Lifting and Stacking Your Materials!

ALL YOU DO IS PRESS THE BUTTON!

MUSCLE MIKE Makes Tons *Feather-Light* with TRANS-TRIPLETS' *Feather-Touch* Operation



PLATFORM TRANSPORTER—Lifts and moves 2,000, 4,000 and 6,000 pound loads with feather-touch of thumb on buttons. Pallet and platform models. With ATCO Electric Lift or DUAL-LIFT Foot Pump.



TRANSTACKER—Combines all features of Transporter, with a high-lift feature for stacking of 2,000 to 5,000 pound loads in seconds. Light in weight for limited floor and elevator capacities.

TRANSTRACTOR—will push or pull 6,000 pounds all day long . . . or up to 20,000 pounds intermittently, depending on type of load. Transporter power unit and finger-tip button control.

Yes . . . all you have to do is PRESS THE BUTTON . . . and presto, Automatic's TRANS-TRIPLETS you see pictured here, move, lift, tow... and even stack your material with amazing touch-of-thumb ease. Tons of raw material or finished product are made FEATHER-LIGHT . . . are moved efficiently into, around, and out of your plant with FEATHER-TOUCH operation!

A miracle of scientific engineering puts Muscle Mike, the mighty midget in TRANS-TRIPLETS' electric power units, to work for you. Labor's load is lightened, workers are released for more productive work, and management's load is lightened too.

For it is a matter of record, that Automatic's Transporters, Transtackers and Transtractors . . . alone, or in combination . . . have cut handling costs as much as 60% in all kinds of industries.

One plant, with a single Transporter, cut handling costs $24,480.00 in one year. Workers gained a bonus of freedom from gruelling, back-breaking manual handling, production was accelerated, orders filled faster, customers got quicker service.

Investigate how you can put these industry-tested wonders of electric moving and lifting power to work for you. They pay for themselves in a surprisingly short time, give you permanent relief from the high overhead of manual material handling. Mail the coupon for complete facts.

Transporter
A PRODUCT OF AUTOMATIC
Lightens LIFE'S LOADS

Mail Coupon!

FOR FREE SHOWING
"THE TRANSPORTER NEWS REEL"
Starring the Trans-triplets
Narrated by Muscle Mike

AUTOMATIC TRANSPORTATION COMPANY
DIV. OF THE YALE & TOWNE MFG. CO.
141 West 87th Street, Dept. C-8, Chicago 20, Ill.

Send me complete facts on how I can cut my material handling costs with Automatic's TRANS-TRIPLETS line of motorized hand trucks.

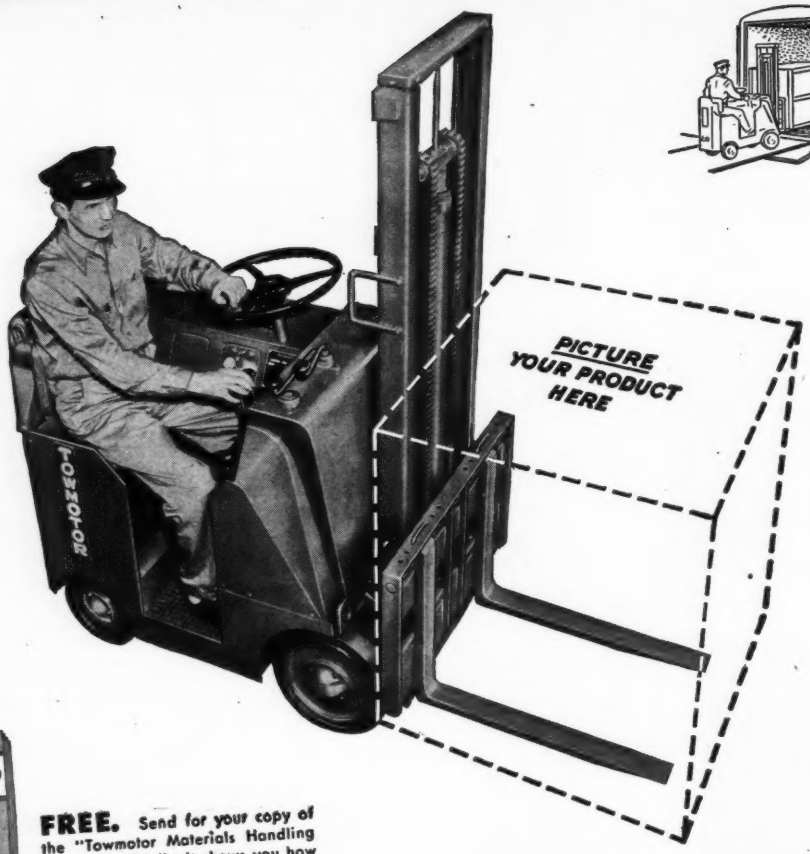
( ) Transporter ( ) Transtacker ( ) Transtractor
( ) Have an ATCO Specialist make a free survey of my material handling costs.
( ) Schedule me for showing of "Transporter Newsreel"

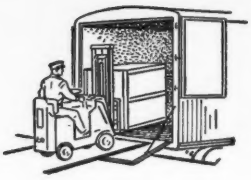
Company Name.....
By.....Position.....
Street Address.....
City.....Zone.....State.....

MANUFACTURERS OF THE FAMOUS TRANSPORTERS, TRANSTACKERS AND SKYLIFT ELECTRIC TRUCKS

You Need MH* to SAVE TIME!

*M H is MASS HANDLING — the systematic movement of the most units, in the shortest time, at the lowest cost.





FREE. Send for your copy of the "Towmotor Materials Handling Analysis Guide"—it shows you how to analyze and improve handling operations in your plant.

TOWMOTOR CORPORATION, DIVISION 8 • 1226 EAST 152ND STREET, CLEVELAND 10, OHIO

REPRESENTATIVES IN PRINCIPAL CITIES

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THE ONE-MAN-GANG

Fork Lift Trucks *and* Tractors

WHY BUILD A NEW PLANT when you can modernize your present handling methods and streamline production operations with Towmotor Mass Handling? Towmotor Fork Lift Trucks, Tractors and Accessories will insure the most efficient use of present production equipment, manpower and space. Learn now how a versatile Towmotor can save time by speeding up handling operations in your plant.

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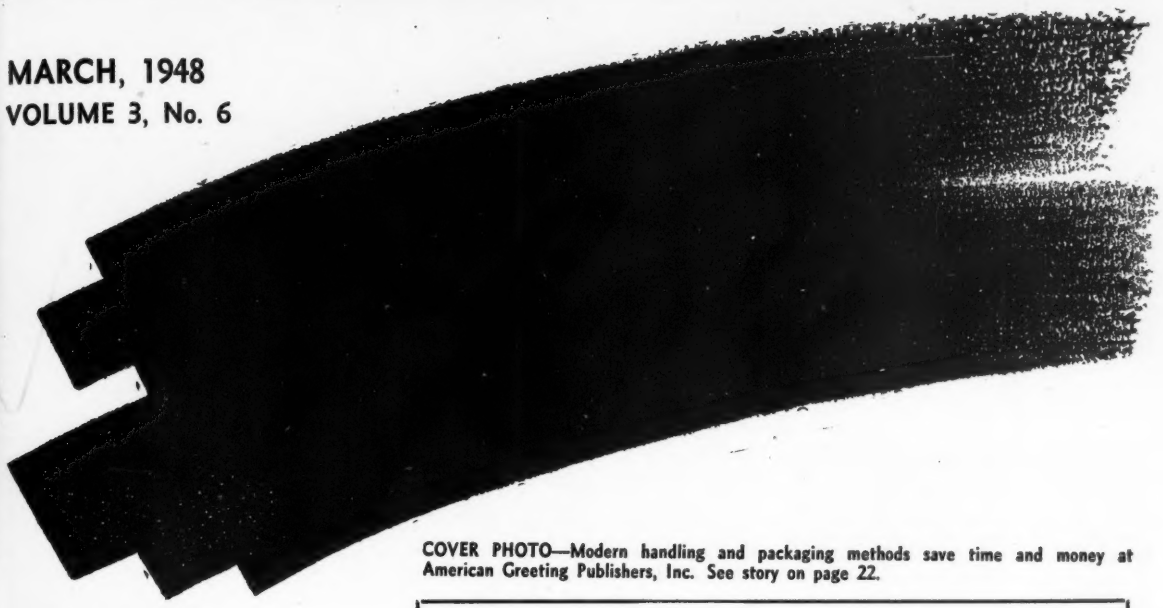
VOLUME 3, No. 6



COVER PHOTO—Modern handling and packaging methods save time and money at American Greeting Publishers, Inc. See story on page 22.

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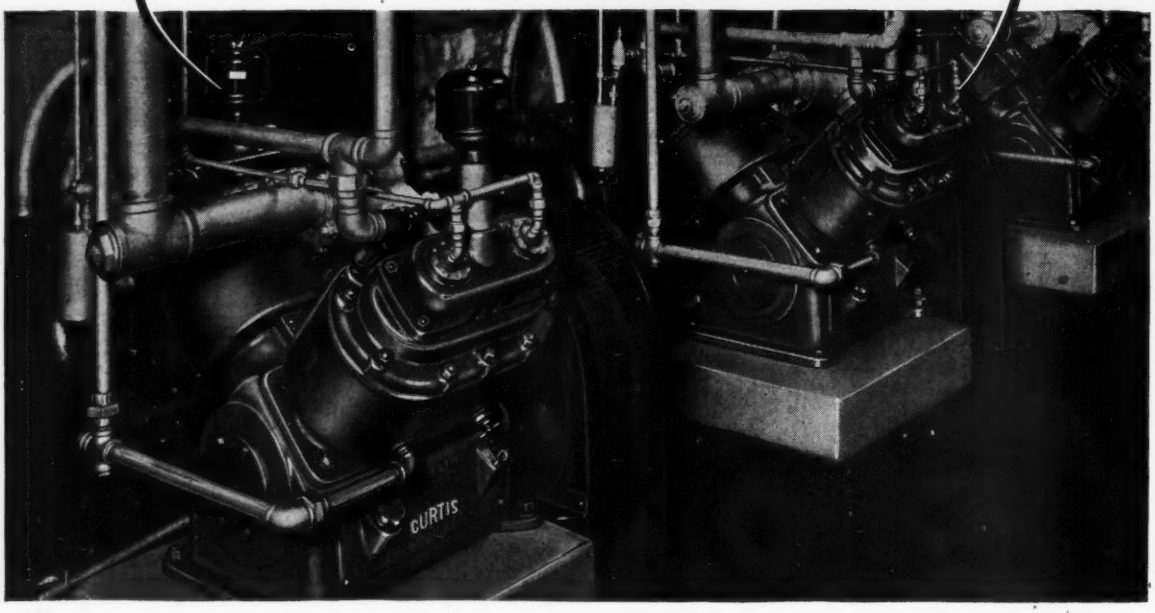
FOR AN ADEQUATE, DEPENDABLE AIR SUPPLY

Specify **CURTIS**

"PRECISION BUILT"

AIR COMPRESSORS



In thousands of plants throughout the country Curtis Model "C" Air Compressors are delivering a completely satisfactory air supply under widely varying conditions.

The precision construction of every Curtis Air Compressor assures dependable, trouble-free operation with less wear, unusually long life and low operating and maintenance costs.

Curtis economy results from such outstanding design features as:

- **Timken Roller Bearings**
- **Positive Lubrication — Self-oiling**
- **Carbon-free Disc Valves**
- **Automatic Pressure Unloader**
- **Precision Construction Throughout**

Curtis Air Compressors are available in sizes from ¼ to 50 H.P. Write today for full information or simply fill in the coupon below.

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1909 Kienlen Avenue, St. Louis 20, Missouri

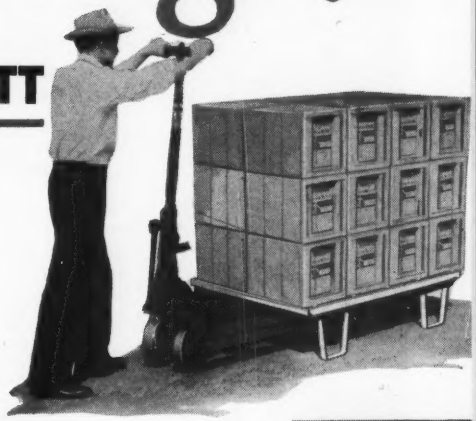
Please send me Form C-7 on Curtis Air Hoists, Air Cylinders and Curtis Air Compressors.

Name.....
Firm.....
Street.....
City.....*Zone*....*State*.....

In this camera study, a light bulb on the worker's wrist produces this tangled mass of lines, showing his movements. If your truckers make such moves repeatedly—you are wasting time and money.

Wow! what a tangle!

...but so easily unsnarled...with a BARRETT



Avoid these costly tangles! Straighten out your handling problems with Barrett Lift-trucks and Skids.

They put an end to repeated loading and unloading—piling and unpiling. The loads stay on the skids . . . always ready to roll with the sweep of the Lift-truck handle.

There are no waste moves as Barrett Lift-trucks and Skids take your materials from room to room, floor to floor, in and out of storage . . . so quickly and easily that one man with a Barrett actually handles more than 3 or 4!

Ask to see the Barrett system. A Barrett engineer will be glad to demonstrate.

Send for your free *copy of the Barrett Junior Catalog.*

BARRETT-CRAVENS COMPANY

4619 South Western Blvd. • Chicago 9, Illinois

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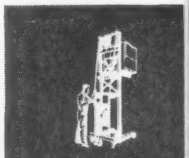
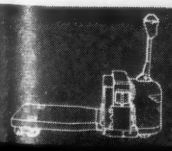
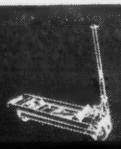
BARRETT

ONE MAN DOES MORE THAN 3 OR 4 . . . WITH A BARRETT





Barrett Handling Equipment



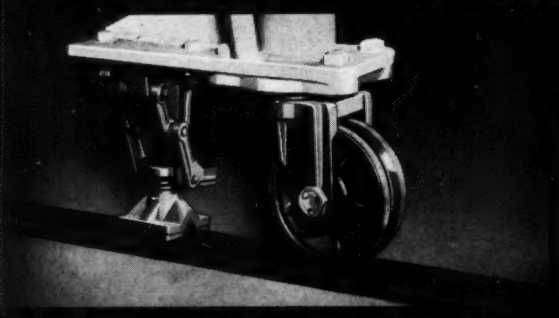
IT COSTS LESS TO "RIDE THE RAILS"

Cut Materials Handling and Assembly Costs With Bassick's Grooved Wheel Casters on Angle Iron Floor Track

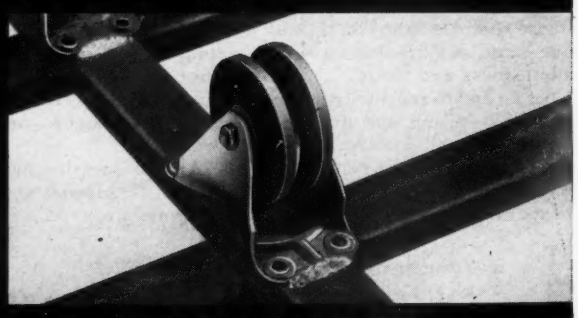
At the Reading, Pennsylvania foundry of Empire Steel Castings, Inc., molds move rapidly, smoothly, directly...on simple efficient dollies mounted on Bassick Grooved Wheel Casters and rolling on angle iron floor track. Each dolly weighs only 75 pounds, yet carries a load of 1000 pounds of poured molds. Molds are loaded easily, moved quickly to the pouring point and continue smoothly down the line to cooling area.

Bassick Grooved Wheel Casters on angle iron track comprise a system that's easily installed . . . easily changed or relocated...low in first cost... low in maintenance. Wheels roll on the track or on the floor. Now in use in many industries. For facts regarding Grooved Wheel applications, write: THE BASSICK CO., Bridgeport 2, Connecticut.

Molds at Empire Steel Castings, Inc., are poured on a "production line" consisting of dollies mounted on Bassick Grooved Wheel Casters riding on inexpensive angle iron floor track.



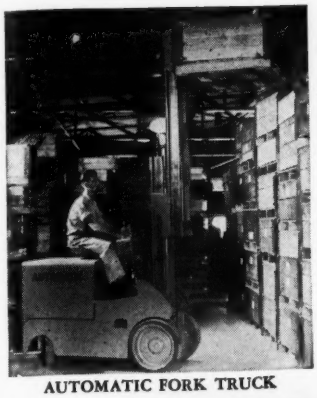
A Bassick Grooved Wheel Caster and Bassick Position Lock (to hold portable equipment in fixed position) as used on industrial production lines.



Close-up, inverted view, of rigid caster with "V" grooved wheel.

THE BASSICK COMPANY
Division of Stewart-Warner Corporation. Canadian Division: Stewart-Warner-Alemite Corporation, Ltd., Belleville, Ontario.

Bassick
Making more kinds of Casters ... Making Casters do more



AUTOMATIC FORK TRUCK

WHEN CHOOSING A TRUCK *BE SURE* IT HAS

AUTOMATIC TRANSPORTER

DEPENDABLE POWER

EXIDE-IRONCLAD BATTERIES have lifting power, hauling power, lasting power . . . when you need it, as you need it, and straight through every shift. This extra power of Exide-Ironclad Batteries is due to a unique construction, which differs from that of all other batteries.

One notable difference is in the positive plate, which consists of a series of slotted tubes containing the active material. So fine are these slots that, while they permit easy access of the electrolyte, they retard the active material from readily washing out.

The results are High Power Ability, High Electrical Efficiency, Ruggedness, Long Life and Low Maintenance. Only Exide-Ironclad Batteries have ALL FOUR of those vital characteristics.

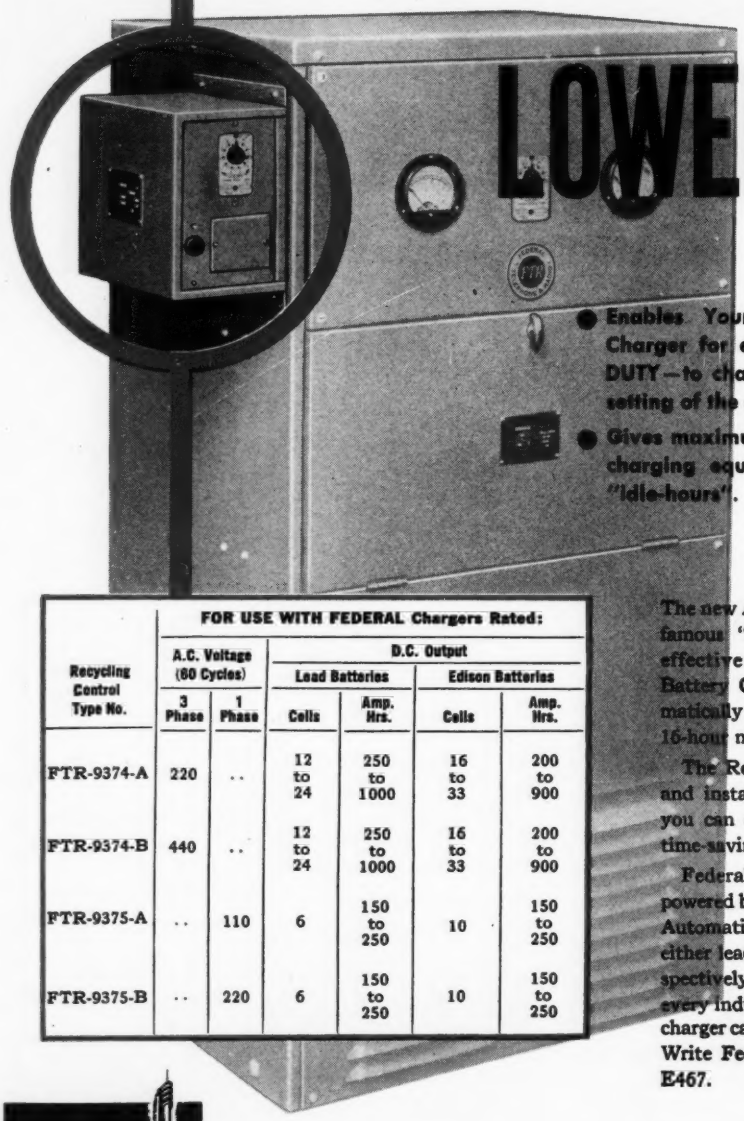
For peak performance and maximum economy, choose the batteries that 81.1%* of electric industrial truck owners prefer—Exide-Ironclad Batteries. **From a recent survey by a leading business publication.*

Write for further particulars and FREE copy of Exide-Ironclad Topics, which covers latest developments in material handling and shows actual case histories.

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

Federal's NEW Automatic Charge Recycling Control

KEEPS 'EM ROLLING AT LOWER COSTS



- **Enables Your Federal Selenium Rectifier Battery Charger for electric industrial trucks to do DOUBLE DUTY—to charge two batteries consecutively at one setting of the controls.**
- **Gives maximum return on your capital investment in charging equipment. More WORK-HOURS and less "idle-hours".**

Recycling Control Type No.	FOR USE WITH FEDERAL Chargers Rated: A.C. Voltage (60 Cycles) 3 Phase	1 Phase	D.C. Output Lead Batteries Cells	Amp. Hrs.	Edison Batteries Cells	Amp. Hrs.
FTR-9374-A	220	..	12 to 24	250 to 1000	16 to 33	200 to 900
FTR-9374-B	440	..	12 to 24	250 to 1000	16 to 33	200 to 900
FTR-9375-A	..	110	6	150 to 250	10	150 to 250
FTR-9375-B	..	220	6	150 to 250	10	150 to 250

The new Automatic Charge Recycling Control, another famous "first" by Federal, practically *doubles* the effective output of your Federal Industrial Truck Battery Charger—saves valuable manhours by automatically charging *two* batteries in sequence, in a single 16-hour night shift.

The Recycling Control can be purchased separately and installed on your existing Federal chargers—or you can obtain your new battery chargers with this time-saving labor-saving device already installed.

Federal's Industrial Truck Battery Chargers are powered by long-life, high-efficiency Selenium Rectifiers. Automatic controls provide for completely charging either lead or Edison-type batteries in 8 or 7 hours respectively. Federal chargers are available for practically every industrial truck requirement—and *every* Federal charger can be equipped with the new Recycling Control. Write Federal today for complete information. Dept. E467.

KEEPING FEDERAL YEARS AHEAD... is IT&T's world-wide research and engineering organization, of which the Federal Telecommunication Laboratories, Nutley, N. J., is a unit.

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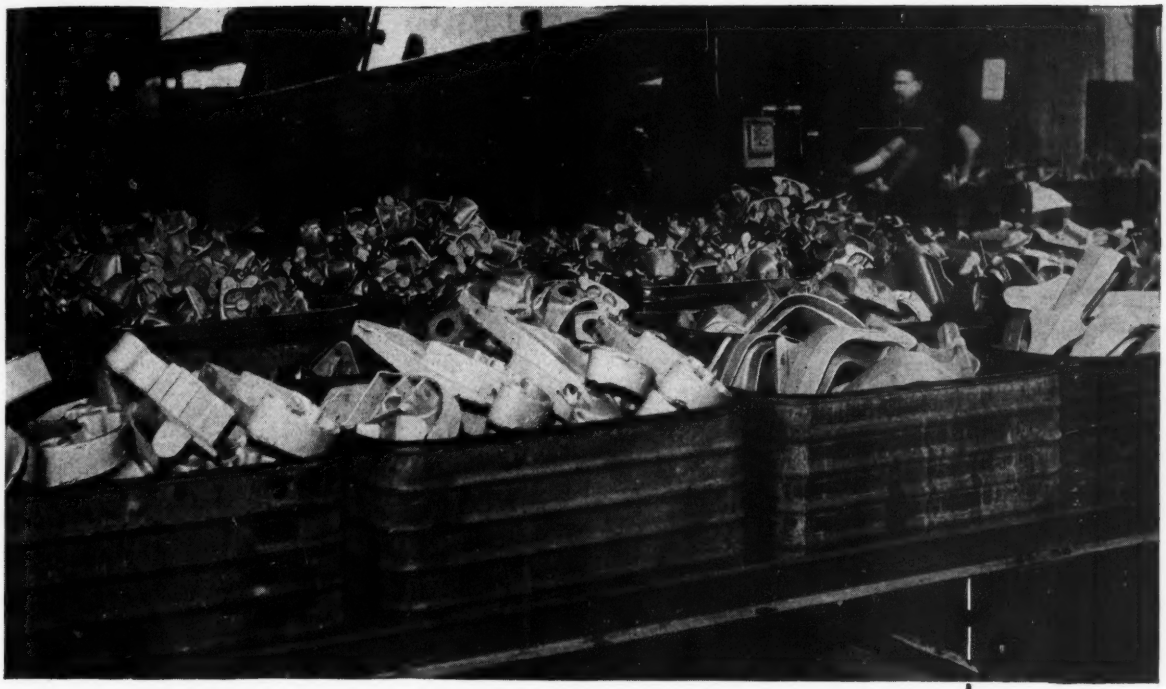


Savings all along the line

with UNION METAL *Engineered* materials handling equipment

PICTURED above is a typical example of how Union Metal materials handling equipment increased production line efficiency —reduced handling costs.

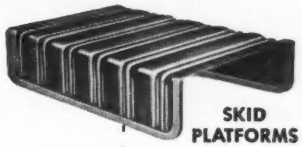
Here Union Metal steel boxes are being used to move unit loads on a continuous conveyor in a malleable iron foundry. This installation, in conjunction with tiering skid boxes used in other departmental operations, increased production 300% —without additional buildings or operating equipment.

Similar results in savings and profits can often be realized through the use of our steel pallets and skid platforms. These units, like Union Metal's steel boxes—

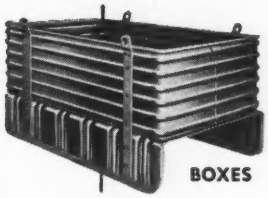
Keep floor space clear for production needs . . .
Effectively use every cubic foot of storage area . . .
Help keep production lines on a time-and-money-saving schedule.

Rugged and long-lasting, they serve efficiently in hundreds of industrial plants across the nation—because they're engineered for the job intended . . . and because they're built by Union Metal, specialists in steel fabrication for over 40 years.

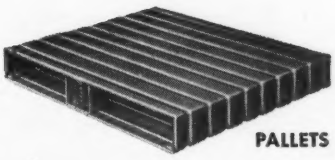
For complete information, write The Union Metal Manufacturing Company, Canton 5, Ohio.



SKID PLATFORMS



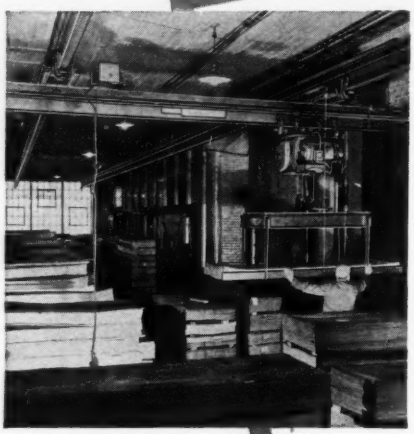
BOXES

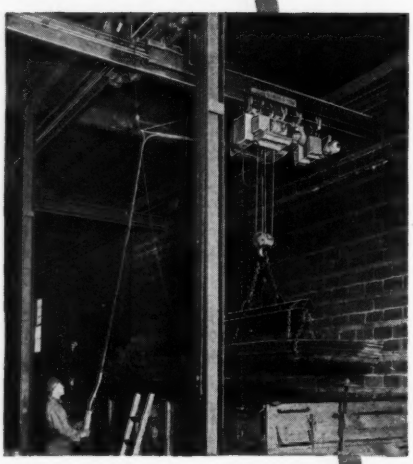


PALLETS

UNION METAL
Materials Handling Equipment

5-Ton Low Headroom MONORAIL CRANES





AMERICAN MONORAIL 5-Ton Cranes furnish efficient operation where headroom is a critical problem. Twin-bridges with carrier mounted between bridges bring load clearance to uppermost limit for extreme low headroom operation. American MonoRail Low Headroom Cranes operate by cab or from floor by finger-tip control. Interlocking devices permit carrier to travel beyond craneways. Loads are moved over maximum area, every square foot of operating and storage space is served. Cranes can be installed under present operating conditions without excessive structural changes.

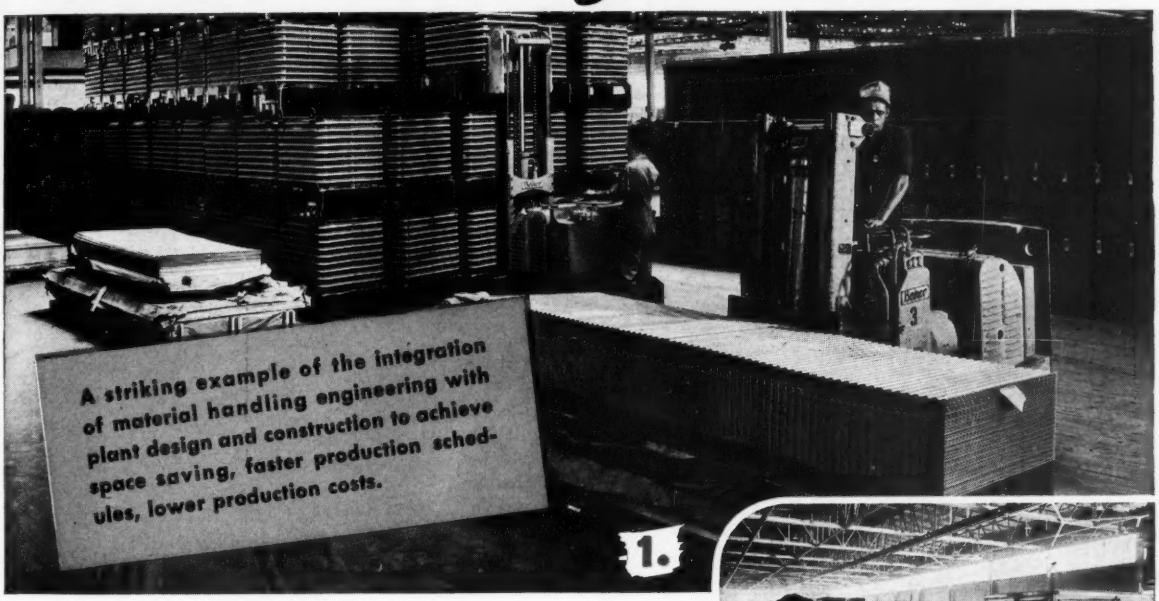
An American MonoRail Engineer will be glad to discuss the possibilities of crane operation in low headroom areas regardless of the type of handling.

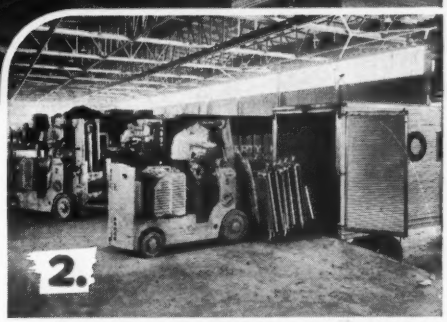
SEND FOR BULLETIN C-1.
A 56-page book showing successful applications of American MonoRail Systems.

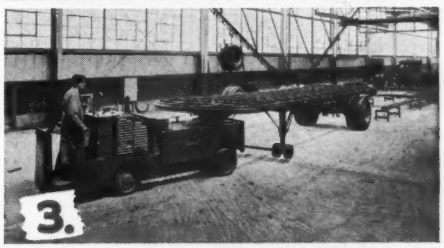
THE AMERICAN MONORAIL COMPANY

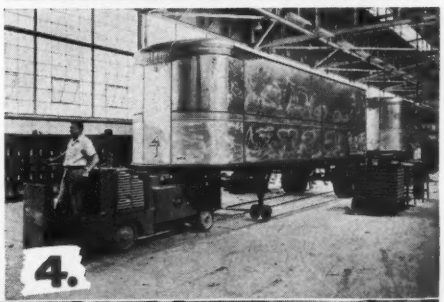
13129 ATHENS AVENUE CLEVELAND 7, OHIO

BAKER TRUCKS *play an essential role at the World's Largest Trailer Plant*


A striking example of the integration of material handling engineering with plant design and construction to achieve space saving, faster production schedules, lower production costs.
1.







● At the mammoth new plant of The Fruehauf Trailer Company, Avon Lake, Ohio, a fleet of 15 Baker Trucks, together with miles of mechanical conveyors and other handling equipment, helps to achieve new trailer production records.

The plant contains 880,000 sq. ft. of floor space. A half-mile long assembly line on one side parallels inside receiving platforms at trailer or rail car door level, on the opposite side. Space between is devoted to sub assembly, production storage, etc. Baker Fork Trucks unload materials and prefabricated parts and transport them—on pallets whenever possible—to production storage—where they are tiered to conserve floor space. From this point, most of them are carried to assembly line by overhead conveyors. Baker Hy-Lift Trucks and a Baker Tractor assist in inter-department handling. (See illustrations 1 and 2.)

Six Baker Tractors, specially designed for Fruehauf with built-in elevating trailer coupler, pull partially built trailers between units of assembly line and take finished trailers from end of line. (See 3 and 4.) They also take trailers from line to modification departments, and return them to the line. Because of their maneuverability, these trucks can operate in extremely small areas thus vitally affecting the original plant design.

If you are considering a new plant or a new assembly line, it will pay you to incorporate modern handling methods in your plans. A Baker Material Handling Engineer will help you.

BAKER INDUSTRIAL TRUCK DIVISION *of The Baker-Raulang Company*
2185 West 25th Street • Cleveland, Ohio
In Canada: Railway & Power Engineering Corporation, Limited

POWELL

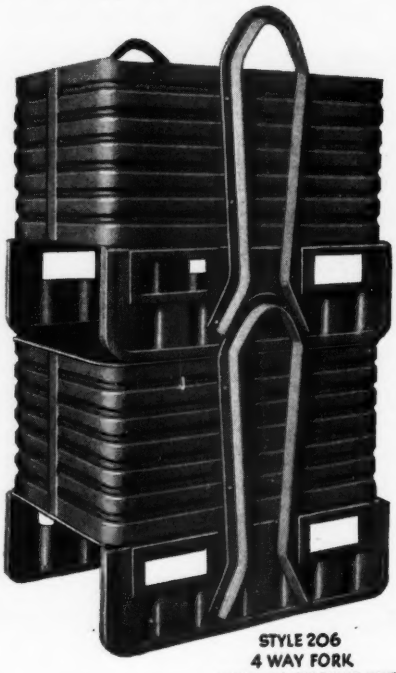
SPECIAL HANDLING EQUIPMENT

POWELL Specialized engineering for particular applications.

STYLE 410
STACKING PALLET-RACK

STYLE 205 is designed for 2-way entry with either platform or fork-type truck.

STYLE 410 is designed as a complementary unit for Styles 205 and 206 to handle bulky materials.

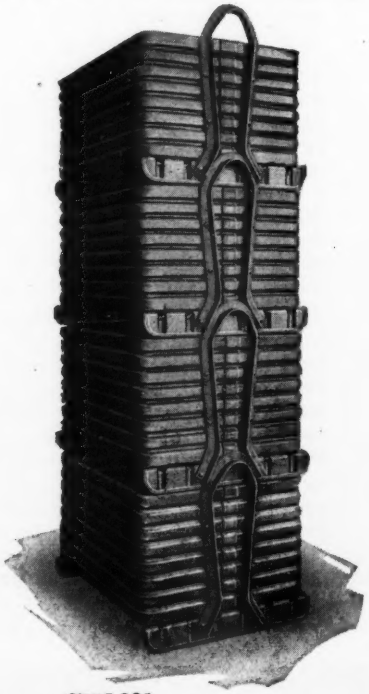


STYLE 206
4 WAY FORK
HANDLING STACKING UNIT

Note the special formed angles which assure interchange and positive secure stacking.

STYLE 310-A
CASTER BOTTOM
DUMP UNIT

These units can also be used to handle Production Flow



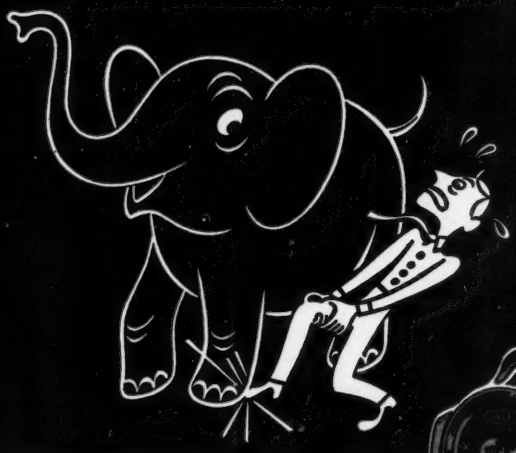
STYLE 205
STACKING PALLET BOX

Representation in Principal Cities

THE POWELL PRESSED STEEL CO.—HUBBARD, OHIO

"ORIGINATORS of Cold Formed All Steel Handling Equipment"

GET A HOIST !



A YALE HOIST

Are you pinned down by mammoth production costs that muscles can't budge? Then get out from under with a Yale Spur-Geared Hand Hoist.

It will lift more tons per day, more efficiently at less cost per ton than a crew of muscle men. Capacities from ¼ to 40 tons. Consult your local telephone Directory for the mill supply distributor nearest you, or send for catalog—SG-T. The Yale & Towne Mfg. Co., 4533 Tacony St., Phila. 24, Pa.

TOOLS THAT KEEP INDUSTRY "ON THE MOVE"

YALE

SCALES
HAND AND ELECTRIC HOISTS
HAND LIFT AND ELECTRIC TRUCKS

"ON THE MOVE" WITH YALE

NEWEST ADDITION to the Yale line is the Worksaver. It travels and lifts by electric power. Has 2 forward and reverse speeds. 7 models, with capacities from 1,000 to 6,000 lbs.

"MONEY SAVING SPACE SAVER" . . . That's what users call the Yale High Lift Fork Truck. Piles palletized loads ceiling high. Scores of other standard models to fit your individual requirements. Capacities up to 60,000 lbs.

HANDLING MORE MATERIAL with less effort is routine for Yale Hand Lift Trucks. Wide range of models. Single and multiple stroke; mechanical and hydraulic lift. Capacities from 1,000 to 20,000 lbs.

YALE OFFERS NEW SCALE LINE—for the weighing, counting, batching and testing of all kinds of materials. They cut weighing time, give you prolonged accuracy, lowest possible maintenance, increased scale life. With capacities up to 60,000 lbs., Yale Scales meet all industrial needs.

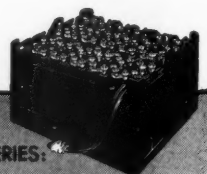
UP goes material-handling efficiency

when you use Battery Industrial Trucks

Greater efficiency in material handling means greater earning power in any plant. Start paring unnecessary moves for production hands or warehouse men and you not only reduce handling cost per unit, but make way for volume never before possible.

Battery industrial trucks are the dependable, economic means of obtaining such efficiency. They can perform their strenuous tasks 24 hours a day every day if required, and their power characteristics are outstanding: instant starting; quiet operation; no fumes; no power used during stops. Driven by electric motors, they have a minimum of wearing parts and are inherently trouble-free.

Keeping these hard-working trucks on the job calls for EDISON Nickel-Iron-Alkaline Batteries. Built of rugged steel, yet precise as a watch, they are recognized for dependability, long life and trouble-free operation. Specify EDISON and you specify maximum reliability—enduring quality.



EDISON
Nickel • Iron • Alkaline
STORAGE BATTERIES

ADVANTAGES OF EDISON NICKEL-IRON-ALKALINE BATTERIES:

They are durable mechanically; can be charged rapidly; withstand temperature extremes; are foolproof electrically; can stand idle indefinitely without injury; are simple and easy to maintain.

EDISON STORAGE BATTERY DIVISION OF THOMAS A. EDISON, INC., WEST ORANGE, N. J.
In Canada: International Equipment Company, Ltd., Montreal and Toronto

LIFT for LESS

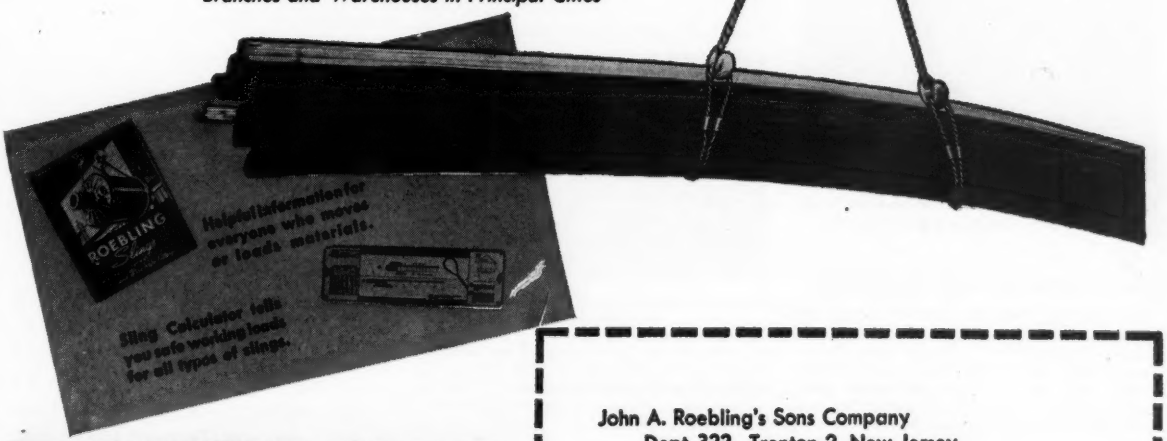
with ROEBLING "FLATWEAVE" SLINGS

SAFE, NON-KINKING, FLEXIBLE, Roebling "Flatweave" Wire Rope Slings save time because they're easy to handle. You can use "Flatweave" Slings without fittings—apply the entire weight of the sling for lifting capacity. Readily passed through and under loads, this unique sling brings new economy to innumerable lifting jobs.

Roebling developed an exclusive method of construction for "Flatweave" Slings . . . six individual wire ropes woven to form a wide, flat surface. This provides a broad bearing area against which pressure is evenly distributed . . . the life of the sling is correspondingly prolonged.

Get the full story about Roebling "Flatweave" slings. The coupon below will bring it.

JOHN A. ROEBLING'S SONS COMPANY
TRENTON 2, NEW JERSEY
Branches and Warehouses in Principal Cities


ROEBLING
Helpful information for everyone who moves or loads materials.
Sling Calculator tells you safe working loads for all types of slings.

ROEBLING

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John A. Roebling's Sons Company
Dept. 322, Trenton 2, New Jersey

Gentlemen: Please send me without obligation:
☐ Roebling Sling Data Book ☐ Sling Calculator

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Title_____

Company_____

Address_____

MATERIAL HANDLING *News*

You'll appreciate why Clark Electric Battery-Powered Fork Trucks enjoy an extraordinary leadership when you consider these basic advantages:

1. **Clark manufactures its own major units**
2. **Clark enjoys the benefit of assembly line production**
3. **Clark provides maximum interchangeability of parts**

Among industrial executives who *know operating costs* of electric fork trucks—taking into consideration initial investment, maintenance cost and operating cost—Clark electric fork trucks are preferred by a generous margin.

These men's opinions may be summarized in the terse comment of one of them—"Clarks cost less!"

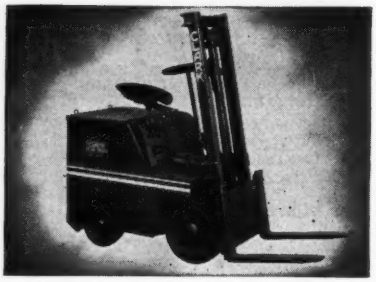
1. VOLUME MANUFACTURE EFFECTS BIG SAVINGS

It is a fact scarcely in need of emphasis to production men that the volume manufacture of Clark machines achieves many important economies. Practically all the major units in Clark machines are produced in Clark's own plants, and on a mass scale—axles, transmissions, wheels, frames and smaller units. All these units must meet the exacting standards established for Clark Products. All possess that rugged excellence that has built the Clark reputation for fine engineering.

Economical assembly saves dollars for customers. Here electrical control gets final inspection.

2. ASSEMBLY-LINE ECONOMIES

A further benefit passed along to users of Clark machines derives from Clark's assembly-line production. Inasmuch as Clark builds both types of fork truck—electric battery-powered and gas-powered—Clark's output is by far the largest in the industry.

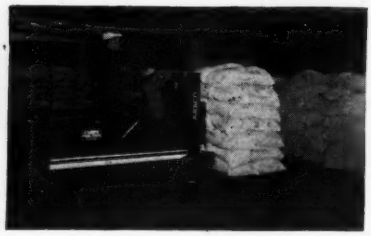


Here is electric battery power in fast, maneuverable form — instantly applicable to countless routine assignments.

3. INTERCHANGEABLE PARTS

A third potent advantage springs from the maximum interchangeability of parts perfected by Clark. Insofar as is possible, parts used in electric trucks are identical with similar parts of gas powered trucks—a source of important savings to Clark users.

The fact that "Clark builds both" is worthy of repetition, and you realize why. Clark's recommendations are unbiased. You get wholly objective counsel concerning your operations and the types of machines that will serve you most efficiently and economically. Here, indeed, is a good recommendation!—CONSULT CLARK.



How to cut handling costs "to the bone"—in one easy picture-lesson.

CLARK GAS AND ELECTRIC POWERED **FORK TRUCKS**
AND INDUSTRIAL TOWING TRACTORS

CLARK EQUIPMENT COMPANY, TRUCTRACTOR DIVISION, BATTLE CREEK 13, MICH.
REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT THE WORLD

To FLOW:
Floor Trucks and Casters

Thank you for calling my attention to the major articles in the February issue of FLOW. I found this extremely interesting and appreciate the effort you have made to tell an interesting story about floor truck and caster equipment for material handling by hand operation. Too many times, material handling articles emphasize the more glamorous power driven types of handling equipment and overlook the real back bone of any material handling system.—J. Faulkner Thomas, President-General Manager; Thomas Truck & Caster Co., Keokuk, Iowa.

More roundup articles discussing the many types of equipment which contribute to the flow of material in American industry will appear in future issues of FLOW. Watch for "How American Industry uses Scales" in the April issue.

To FLOW:
Directory Draws Praise!

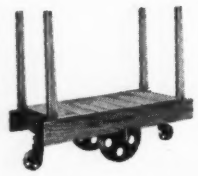
Thanks for the copy of the Directory. This does look like a good job and you are to be congratulated.—Samuel W. Gibb, General Sales Manager, Yale & Towne Mfg. Co., Philadelphia Division.

Thanks for the copy of the FLOW Directory. This is an outstanding job, long needed, and I believe will become the bible for the industry.—R. Kennedy Hanson, Secretary-Treasurer, The Material Handling Institute, Inc.

We are happy that leaders in the material handling industry extending approval to our efforts in presenting the FLOW Directory of Material Handling Equipment, Machinery and Accessories. Many more letters from users have been received and their suggestions for improvements noted for future issues of the book.

FLOW'S SECOND $1500 COST ANALYSIS CONTEST IS NOW OPEN. EIGHT PRIZES, BEGINNING AT $500, WILL BE AWARDED FOR WINNING MANUSCRIPTS. ENTRIES MAY COVER AN ENTIRE PLANT OR A DEPARTMENT SUCH AS RECEIVING, PROCESSING, STORAGE, SHIPPING, OR OTHERS. FOR ENTRY BLANKS AND COMPLETE DETAILS WRITE TO FLOW, 1240 ONTARIO STREET, CLEVELAND 13, OHIO.

FACTORY TRUCK
54600



Handy for many general moving jobs as "stock" truck . . . carrying parts from machine to machine in the course of manufacture. Three lengthwise bolsters assure ample platform support; strong construction throughout. Stakes are removable to add to its general handiness.

PLATFORM OR WAGON TRUCK
01433

Designed specifically for quicker handling of sheet plates in mills but proved very useful for carrying other large, bulky loads. Rugged construction throughout to withstand heavy loads . . . heavy iron strap, set flush, binds platform all around. Wheels extra wide for greater stability.

LIFT JACK PLATFORM TRUCK
500

Lifts and rolls easily . . . ideal for handling heavy loads in small spaces. Eliminates many handling processes. Powerful jack operates by merely pulling handle down. To remove jack, handle lifts up and jack rolls out. No pins, ratchets or levers to operate.

8 WAYS to Save Time and Lower Operating Costs

Receiving . . . production . . . shipping — no matter which of your departments has *slow spots,* it all adds to the cost of the finished job. Where load-handling is bogging things down, put in the right type of Fairbanks Truck for your purpose — each is specifically designed to put speed into tough handling jobs. Check the features of these eight trucks and if you don't see the one to help you, write for Catalog 50 in which over 200 various types are described and illustrated. The Fairbanks Company, 393 Lafayette St., New York 3, N. Y.; Boston, Mass.; Pittsburgh, Pa.; and Houston, Texas.

American industry rolls on fairbanks trucks

COMMANDER STEEL FRAME PLATFORM TRUCK — 52742A

Here's a Tilting or Center Balance Truck that's a real time-saver. Designed for quick turning in congested areas, around corners, narrow aisles. Turns in its own length . . . pushes from either end. Strong construction throughout. Available with Plain or Roller Bearing Semi-Steel Wheels or Roller Bearing Rubber Tired Wheels.

BARREL TRUCK — 426

All steel construction. Specially built to make handling of open barrels easy and quick. Good balance and maneuverability.

CASE TRUCK — L1191

Malleable iron construction. Light in weight yet practically indestructible. Designed for easy handling of heavy cases, boxes and heavy machinery. Spikes on frame top prevent load from slipping. Carries up to one ton.

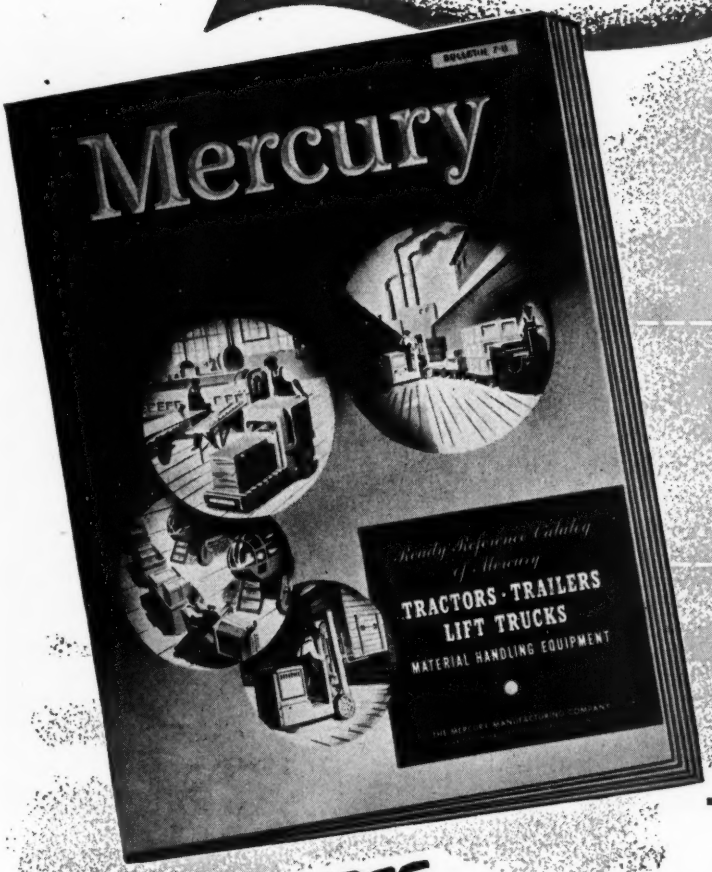
COTTON TRUCK — 9213

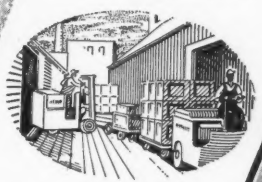
Ideal for handling bales. Designed for the cotton industry but its features make it readily adaptable for easier handling of other large, bulky objects. Full-length steel strapping — front and back — on selected hardwood handles for extra strength and service.

FEED TRUCK — 9310

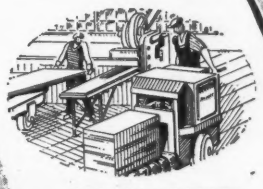
Designed for speedy handling of feed bags but just as handy for moving cases and bales, such as hay, etc. Also proved efficient for handling plumbing and heating supplies. Extra long nose for easier load pick-up . . . steam bent handles.

...the NEW Mercury 7-11 Catalog

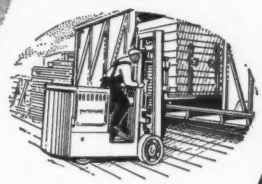




TRACTORS AND TRAILERS



PLATFORM LIFT TRUCKS



FORK TRUCKS

FREE

52 Pages of Valuable Information For The Handling Executive

Just off the press! 52 pages illustrating and describing all Mercury equipment—including the newest additions to Mercury's expanded material handling line.

It's the most comprehensive catalog ever released by The Mercury Manufacturing Company, and a valuable source of information for every handling executive.

Request your free copy of the new Mercury 7-11 Catalog, today. Please use your company letterhead.

Includes Complete Data On The Following—

- Mercury Fork Trucks
- Mercury Tractors
- Mercury Trailers
- Mercury Lift Trucks
- Mercury "Trackless Train"
- Specifications and Features

TRACTORS • TRAILERS • LIFT TRUCKS

MERCURY

THE MERCURY MANUFACTURING CO.

4154 S. HALSTED STREET, CHICAGO 9, ILLINOIS

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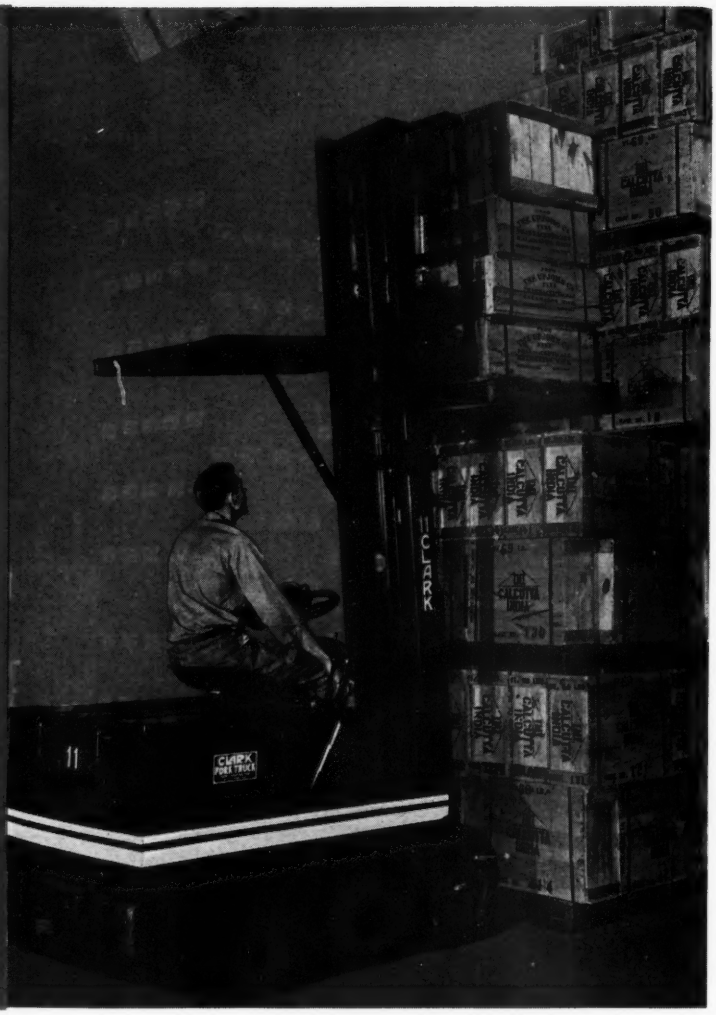
Third largest manufacturer of Industrial lead storage Batteries



CLARK *Elec-Carloader* tiering cases for export.

Specify *Aircool* BATTERIES

with FOURFOLD INSULATION AND RETENTION

1. Vertical Fibre Glass Retainer
2. Horizontal Fibre Glass Retainer
3. Perforated Hard Rubber Retainer
4. Microporous Rubber Separator

C & D Batteries Inc., Conshohocken, Pa.— *Building Better Batteries for more than 40 years*

HEAVY DUTY BATTERIES FOR ELECTRIC INDUSTRIAL TRUCKS • ELECTRIC LOCOMOTIVES • DIESEL LOCOMOTIVES
AIR CONDITIONING AND CAR LIGHTING • TELEPHONE • MARINE • AUXILIARY POWER
STARTING AND LIGHTING BATTERIES FOR MOTORCYCLES • AUTOMOBILES • TRUCKS • BUSES • INDUSTRIAL EQUIPMENT

A LEADER OF INDUSTRY SAYS:

"From the ground up"

An industrial leader discusses the safe and economical flow of bulk material

By HARRY M. MOSES, President
H. C. Frick Coke Co.

FLOW is an apt title for a magazine devoted to so basically a part of good management as material handling, and describes literally the primary problem of a well managed coal mine.

U. S. Steel's H. C. Frick Coke Company operates the Robena Mine, the world's largest, in a 69,000 acre tract underlying Green County, in Pennsylvania. Designed to produce 20,000 tons of cleaned coal a day, materials must flow safely, steadily and economically.

The open-end system of mining is employed and all underground equipment is electrically operated. Permanent haulage from the working faces to the rotary dump consists of 44-inch gauge track of 60 pound rails. Temporary track constructed with 40 pound rail is used for assembly of production at the working face. Coal handling cars are of 235 cubic foot capacity level full and carry an average of approximately 6.5 tons of coal. Main line locomotives haul 35 to 40 cars per trip.

To maintain a reasonably uniform sulphur content, Robena coal must be blended. This operation starts at the two ten-car rotary dumps, which are operated simultaneously so that approximately 65 tons of each classification of coal will be discharged into the 700-ton bins below.

The mixed coal is fed onto a slope belt by means of 10 apron feeders, which have a range of speed varying between 50 and 300 tons per hour per feeder.

The main belt which carries the coal out of the mine is 60 inches wide and about 757 feet long between centers. The total lift is slightly over 171 feet, and operating at 600 feet per minute its capacity is 2,800 tons an hour. It operates through a brick and concrete lined slope tunnel 15 feet wide, which also provides space for a 44-inch gauge service track and a walkway.

Above ground, conveyor belts consisting of 34 units ranging from 14 inches to 60 inches in width with a combined length of approximately one half mile, continue moving the coal through the various screening, picking, breaking and blending operations until it is loaded into river barges. These barges are dispatched on a 61-mile trip down the Monongahela River to the by-product coke ovens at Carnegie-Illinois Steel Corporation's Clairton Works.

Coal mining is a materials handling proposition from the ground up. In quantities required by the steel industry, "flow" is the watchword, and safety the keynote.

Harry M. Moses,
H. C. Frick Coke Co.

$711.00 INVESTMENT
1st Prize Winner

A small investment in material handling equipment used in conjunction with an improved layout resulted in immediate benefits which paid for the installation in 3.1 months.

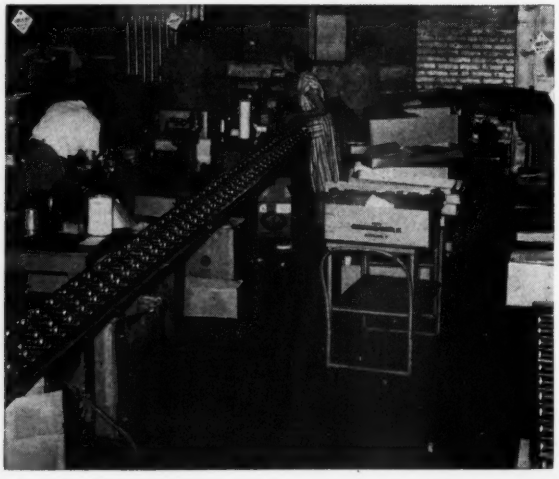
THE old method required the wrapper to lift the filled corrugated box from her table to a skid located 5 feet away. Approximately 8 orders (17 corrugations) were placed on a skid and, when complete, a checker inspected the material to see that the labels and paperwork were correct. (A "corrugation" refers to a corrugated shipping carton containing either a complete order or a part of one.) As there were 7 wrappers working all the time, the checker was required to walk from one wrapping table to the next to examine all loads. Her job was further complicated by the fact that all labels were not readily read from one position due to the various sizes and shapes of corrugations on the skid. When the skid was checked and found in order, the stock man was signaled to haul the load to the elevator "out bay" with a hand lift truck. The elevator man took the load from the "out bay" onto the elevator, down from the second to the first floor, and placed it in the Shipping Department "in bay." The elevator man used a hand lift truck for taking the skids on and off the elevator. The shipping dispatcher moved a load from the "in bay" to his station as required. Each corrugation was lifted from the skid and placed on the scale for weighing and dispatching. It was then placed on another skid containing orders to be given a specific carrier. When the skid was filled, it was taken to the dock to be placed with other skids for the same carrier.

This method had been in use for some time; upon examination, the following obvious faults were found:

1. Handling to and from skids caused fatigue for wrappers and dispatchers.
2. Customers' orders were delayed because a skid containing many orders had to be filled before it was moved and also because of temporary storage in the departments and at the elevators. Rush orders were frequently carried from floor to floor by stairway to eliminate delays.
3. The handling of skids within the department and to and from the elevator caused considerable

THE OLD METHOD

THE NEW METHOD



SAVES $2749.00
In 1947 Flow Contest

confusion within both the Order Filling and Shipping Departments.

4. Floor space was taken up with skids being filled and in temporary storage in departments and elevators bays.

5. Material handling costs were high because effort was expended taking corrugations on and off skids and skids on and off elevators.

6. In the event of an elevator breakdown, customers' orders were delayed. Rush orders were carried down the stairway from floor to floor. Because the elevator was old, breakdowns actually occurred and were a constant threat.

New Method—The Remedy

The above faults were corrected by purchasing 85 feet of 12" wheel conveyor and having our Maintenance Department construct a simple gravity chute between the second and first floors. In addition, minor layout changes were required to obtain full advantage of the new equipment. The total cost of equipment and layout charges was only $711. (See table D.)

The present simplified method allows the operator to slide the corrugation directly onto a table-height wheel conveyor. The corrugation is then given a slight push sending it down the conveyor to the checker who is stationed after the last wrapper. The checker readily checks all labels which are at a constant height and always on the same side. When checked, the carton is again given a slight push

TABLE A—Summary of Savings Realized With Revised Method

Tangible Savings	*Annual Savings*
1. Material handling costs reduced (Table B)	$ 2,448.
2. 502 square feet of floor space saved	251.
3. One less hand lift truck required (Table E)	50.
. (Depreciation and maintenance)	
Total Tangible Savings	$ 2,749.

Intangible Advantages

1. Less operator fatigue.
2. Orders shipped faster, thus giving customers better service.
3. Less confusion within departments.
4. Overloaded elevator relieved.
5. Fewer skids required.

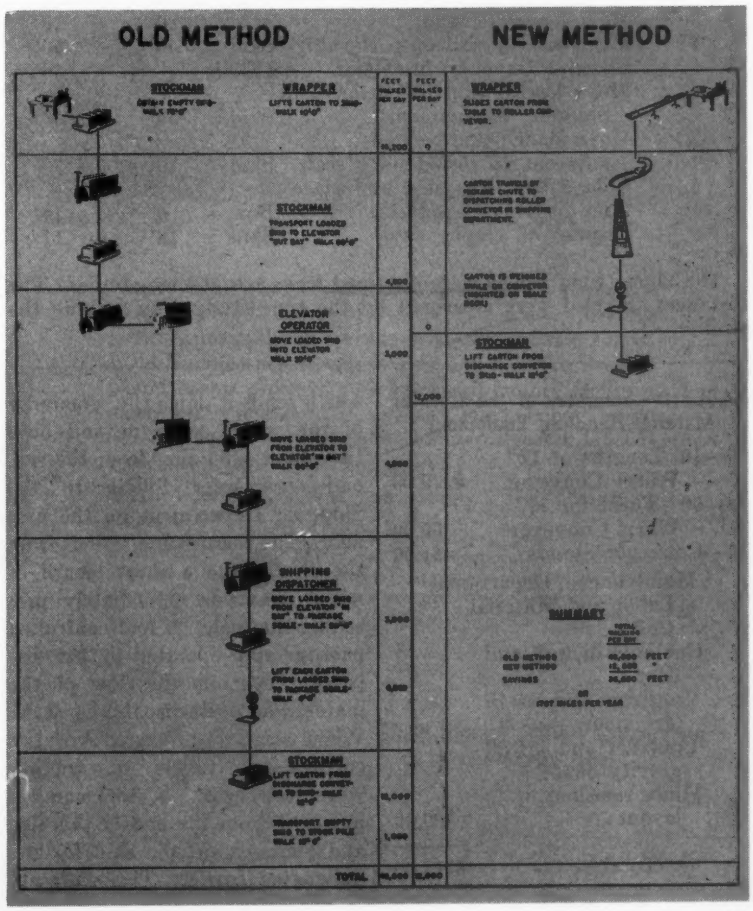


TABLE B—Detail of Material Handling Cost Reductions

	Operation Eliminated	Occurrences Per Day	Minutes Per Occ.*	Minutes Per Day
1.	Obtain empty skid	60	.24	14.40
2.	Move carton from wrapping table to skid	1,000	.22	220.00
3.	Move loaded skid to elevator "out bay"	60	.70	42.00
4.	Move loaded skid into elevator	60	.50	30.00
5.	Elevator travel to 1st floor (2 skids per trip) (Does not include "wait" for elevator)	30	.30	9.00
6.	Move loaded skid to elevator "in bay" on shipping floor	60	.50	30.00
7.	Move loaded skid to dispatching area	60	.70	42.00
8.	Lift carton from skid to dispatching scale	1,000	.14	140.00
9.	Move empty skid to stock pile	60	.11	6.60
	Total			534.00

$\frac{534 \text{ Minutes}}{60}$ = 8.9 Hours Per Day x 250 Days Per Year = 2,225 Hours Per Year

2,225 Hours x $1.10 (Average Earnings/Hour) = $2,448. Savings Per Year

* Time values described in Table C.

TABLE C—Operation Time Values and Distances Involved

Operation Number	Operation Description	Unit	Distance	Standard Minutes
1.	Obtain empty skid for wrapper	Skid	70′	.24
2.	Unload corrugated box from table and place on skid	Box	10′	.22
3.	Move loaded skid to "out bay"	Skid	80′	.70
4.	Move loaded skid onto elevator	Skid	50′	.50
5.	Elevator travel to first floor	2 Skids	—	.30
6.	Move loaded skid to "in bay" in Shipping Department	Skid	50′	.50
7.	Move loaded skid to area adjacent to dispatcher's scale	Skid	70′	.70
8.	Unload box from skid and place on dispatcher's scale	Box	6′	.14
9.	Dispose of empty skid	Skid	18′	.11

The above time values were obtained from actual time studies. The distances traveled were measured by the time study man making the studies.

TABLE D—Summary of the Cost of Material Handling Equipment

9—10′ Lengths of 12″ Wheel Conveyor	$270.00
3—90° Turns for 12″ Wheel Conveyor	90.00
17—Conveyor Stands	51.00
Maintenance Department Labor and Material Costs	
Cut hole in wall and floor	
Construct and install fire door	
Contruct and install gravity chute	
Minor revisions in layout	300.00
Total	$711.00

which sends it down the remainder of the wheel conveyor and onto the chute extending from the second-floor Order Filling to the Shipping Department on the first floor. The corrugation travels from the chute onto a short length of wheel conveyor immediately preceding the scale. A foot-controlled package stop operated by the dispatcher controls the flow of the material onto the dispatching scale. When weighed and dispatched, the corrugation travels to another wheel conveyor. A stockman removes it from the end of this line and places it on the skid for the designated carrier. The skids are then taken to the loading dock as in the previous method.

The greatest tangible saving is the direct result of simplifying manual operations and the integration of the continuous conveyor method into the layout. The walking thus eliminated reached the astounding total of 38,880 feet per day, or 1,787 miles per year. This is graphically described in the comparative material flow chart on these pages.

Floor Space Saved

Minor changes in layout of the wrapping area in the Order Filling Department, coupled with the changes of material handling methods resulted in a savings of 502 square feet of floor space. This is determined by the elimination of approximately 30 skids in process at one time. At 16.75 square feet for each skid this amounts to the total stated above. Figured on a basis of 50¢ per square foot per year, which is our minimum warehousing cost, this amounts to $251.00 tangible saving.

Note: The judges awarded this paper the first prize because of its complete breakdown of cost factors. Remember this for your entry in the 1948 FLOW Cost Analysis Contest.

Savings in Depreciation and Maintenance of One Hand Lift Truck.

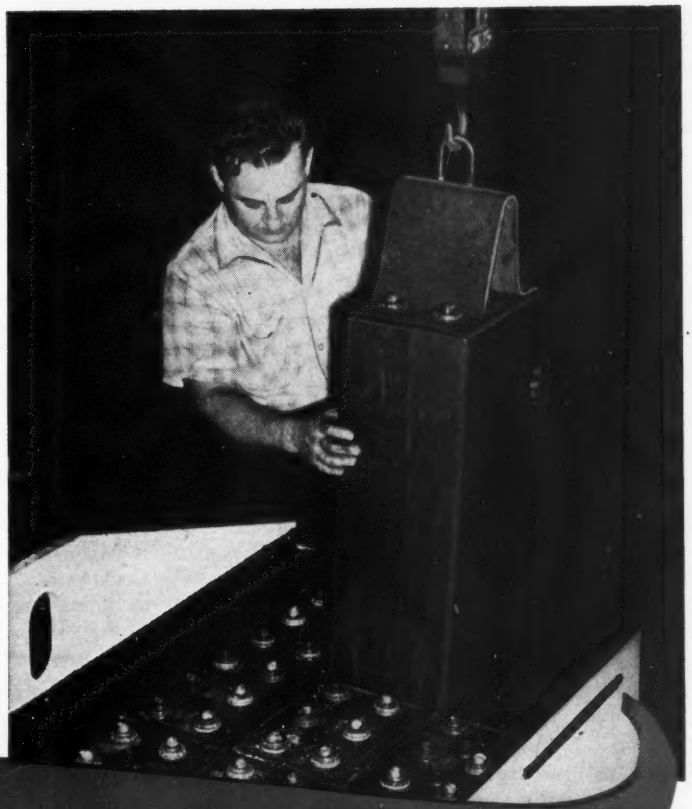
The installation of the conveyor and chute enabled us to save one hand lift truck which was utilized for transporting loaded skids from the wrapping tables to the elevator. The savings thus accrued are calculated as follows:

TABLE E

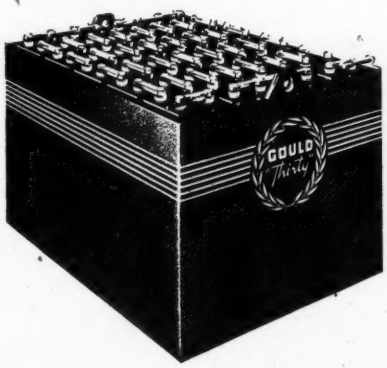
Purchase price of truck	$450.
Depreciation @ 10 Years' Rate	$45. Per Year
Maintenance	5. " "
Total	$50. " "

The new FLOW Directory of material Handling Equipment, Machinery and Accessories is ready for distribution. Order your copy today.

THE GREATER GOULD MEANS BETTER SERVICE



Another way you profit from the GREATER GOULD*



Nearly twenty battery manufacturing plants across the nation enable Gould to provide service and engineering facilities unequaled in the industrial storage battery field. Field Engineering Service is only one way the Greater Gould means profit to you. Increased factory facilities mean surer deliveries. Combined engineering "know how," plus the only complete battery research laboratory, mean better batteries today.

Small wonder Gould is increasingly "The Choice of Engineers."

*The Storage Battery Division of Philco Corporation was merged with the Gould Storage Battery Corporation on June 28, 1947. The consolidated organizations are operating under the name of Gould.

GOULD

Gould Storage Battery Corporation
TRENTON, NEW JERSEY

"Thirty" and KATHANODE **BATTERIES**

correct use of standard equipment pays dividends . . .

IN CHIP DISPOSAL

CHIP CART being loaded with chips at machine.

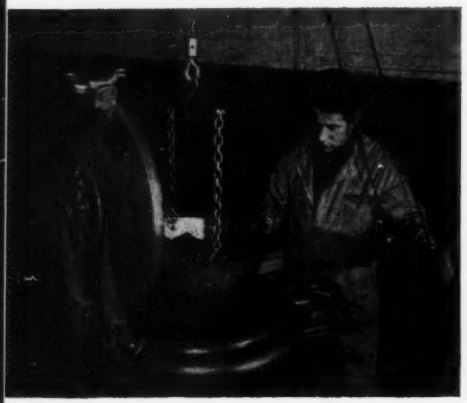
If the machining operations in your plant produce large quantities of chips, the Jack & Heintz method of disposal from machine to the scrap removal truck should prove not only interesting but helpful. More than 200 gallons of coolant oil are saved per 12-hour period and the metal brings a higher price.

CARTS, ELECTRIC HOISTS, MOBILE CRANE, STEEL . . . .

DUMPING CHIPS into elevator bin at crusher.

DURING the last war, most metal processing industries were confronted with two vital problems. The first was chip disposal, and the second was obtaining cutting oils for coolant purposes on lathes, milling machines, drill presses, and other machines. Chip disposal often is the one unsightly blotch on an otherwise smooth material flow through a plant. Moreover, segregation of chips is just as important as neat disposal due to the added value

BUCKET OF CHIPS lowered by overhead hoist into centrifuge where oil is removed.



HOIST HOLDING chip bucket as operator dumps chips into large corrugated steel skid bins.

when similar S.A.E. specifications are in one package at the time of sale.

Cutting oils which cling to the chips during machining do not add to the value of the chips, and to disregard the possibility of reclaiming and reusing this oil can mean a loss amounting to a sizable figure. The resultant additional cost of manufacturing must thus be absorbed in the selling price of the parts made.

Mass Movement-Hoist Handling

Jack & Heintz Precision Industries, Inc., is handling these two problems effectively. As the chips accumulate at the machines during processing, material handlers remove them with a long-handle pronged device into two-wheel chip carts. These carts are provided with both handles for pushing and eye-hooks for hoist lifting. Once loaded they are removed to the chip crushing room to be processed.

The location of this room is such that entry is made from a passageway a short distance from the huge room containing over 200 automatics. In the processing department, all the material moves toward the exit, passing from left to right.

As the material handlers bring the chips into the room from the machine shop, they wheel the carts to one of the crushers and dump the cuttings into a bucket conveyor as shown in one of the photos. This conveyor with its chain drive carries the long spirals of metal up and over into the crusher, a device which crunches the chips into small easily-handled pieces. This method of handling does two things: 1. It makes the pieces small enough so that a larger quantity can be handled at one time. 2. It crushes the chips fine in order to make a compact mass for centrifuging.

In order to eliminate manual lifting, the chip room is equipped with bridge hoist combinations servicing the entire area. As the chips leave the crusher, drop into a bin and emerge from a chute, material handlers place the metal into the centrifuge buckets and hoist them into the spinner. The oil thrown free from the revolving mass drains off at the bottom and is fed to the oil sump from which point it is pumped into an overhead tank.

The clean chips are then withdrawn from the centrifuge by the hoist and dumped into conveyor buckets. As shown in one of the photos, these buckets are half-cylinder containers closed at one end and mounted on angle iron castered legs. Two eye-hooks spaced midway of the length provide easy hoist handling. By raising the rear legs of the bucket, the chips fall free into the large skid bins lined up under the hoist span.

These bins are designed for chip handling. They are approximately four feet wide by five feet long and are about five feet high. The heavy corrugated sides and skid bottom are made for rugged use. S.A.E. specifications are painted on the sides to keep the stock segregated, while each end is provided with a trunnion for dumping purposes.

Fork Truck and Mobile Crane

To move the large skid bins from the chip room, a 6000-pound capacity fork truck is used. Ample area for positioning the forks under the bins is provided and aisles are of sufficient width to allow forward manipulation, as the chips are being removed to the outdoor storage yard.

In the storage area a mobile crane is employed to dump the chips from the skid bins into dump trucks. The trunnions mentioned before at each end of the bins are the points of attachment for the lifting spreader bar. A hole positioned halfway between the trunnions and located in one of the skid legs permits hooking on the trip line of the crane, which rotates and inverts the bin releasing the chips.

The railroad siding is so positioned in this chip handling location to permit loading the chips into open top cars should there be an accumulation of one type of steel, or should it be necessary to ship a large quantity over a long distance. The mobile crane can then be used in similar fashion to dump the bins into railroad cars.

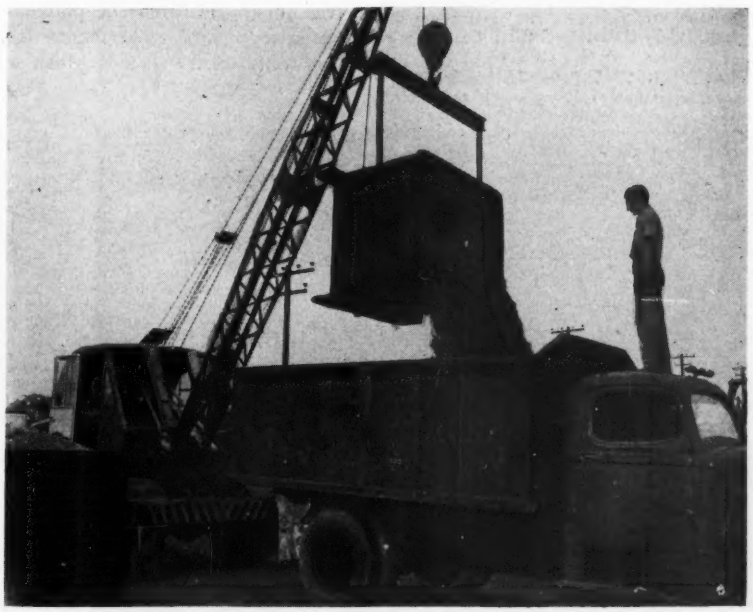
Oil Drums Stored Vertically

If someone took time to figure the loss in dollars each year from oil being thrown away when it could be reused, the amount would be staggering. The factors which render oil unsuitable for reuse, however, can be removed and a considerable savings experienced.

The oil which drains from the centrifuges, after the chips have been spun at a high rate, flows into a reservoir equipped with a sump pump. From this point it is pumped to an overhead tank, passed through a sterilizer where it

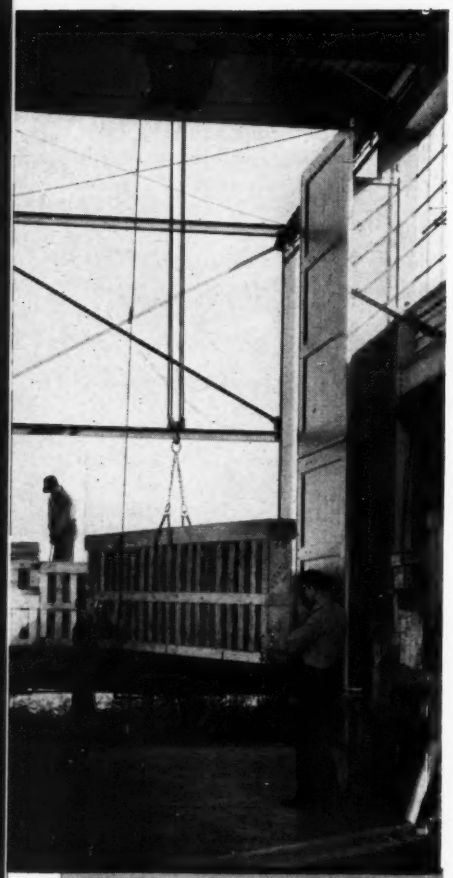
(Turn to page 49)

TRUNNION-MOUNTED skid bins loaded with chips being dumped by mobile yard crane.



HOISTS, GRABS, FORK TRUCK, CASTERED DOLLIES, BINS

Glass...with Care...



RAIL CAR UNLOADING. Monorail hoist, operating over siding, handles heavy crates of glass. (Libby-Owens-Ford Glass Co. Photo)

PLATE HANDLING. Dolly with felt-lined slot moves large sheets of glass quickly and safely.

Specific devices in all operations—receiving, storage, fabricating, shipping—are adapted for moving the fragile material safely and economically through processing, and to the customer.

THE "last word" in up-to-date glass handling methods is the rule in the new Cleveland jobbing and fabricating plant of Cadillac Glass Co.

With maximum efficiency in mind, the 27,500 square feet in the one-story building have been laid out to accommodate fabrication and storage of the four major products. The storage areas, allocated to plate glass, window glass, processed glass and rough glass, are conveniently located to receive and ship the material without congestion or confusion. Cutting tables and other fabricating equipment are installed near the material in each bay, thus avoiding long moves and excessive handling.

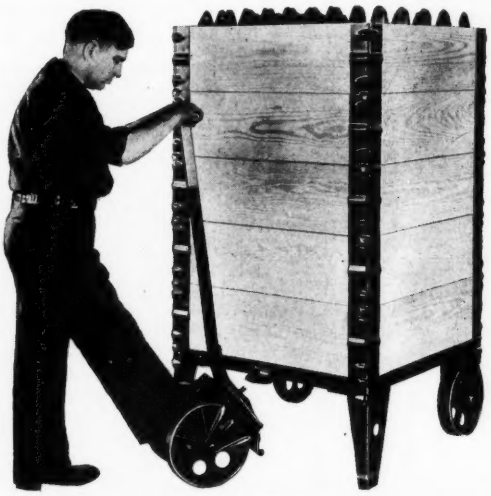
A high bay area, bridged by a monorail-mounted 4000-pound electric hoist, separates the plate and processed glass departments from the rough and window glass sections. Extending across the width of the plant, this area is kept clear to facilitate handling of materials in and out of the departments.

Shipping and Receiving

The 25-foot-high open area terminates at the rail siding on the north side of the building and has a motor truck entrance in the south end. To facilitate receiving deliveries by rail, the dual trackage on which the hoist bridge travels is extended for 20 feet over the siding. This makes it possible to unload flat cars and carry the loads directly to assigned departments without rehandling.

Two types of hoist grabs are used for unloading rail cars. The choice depends on the method of loading by the consignor. For instance, when crates of glass are packed tightly in a vertical position, a four-hook grab is employed. One crate at a time is sufficiently separated from the balance of the load to insert the hooks, which are attached under the top rail of the crate at approximately the longitudinal center on both sides. The hoist lifts the crate off the car, and the operator guides the elevated load into the plant and to the particular department. Use of this grab is limited to loads under 1700 pounds.

For boxes of plate glass up to 4000 pounds, another type of grab is used. It has two right-angle hooks riding freely on a chain loop. In operation, the cleated lifting surface of the grab is applied to a wooden block projection at the top corner of each end. As the lift is

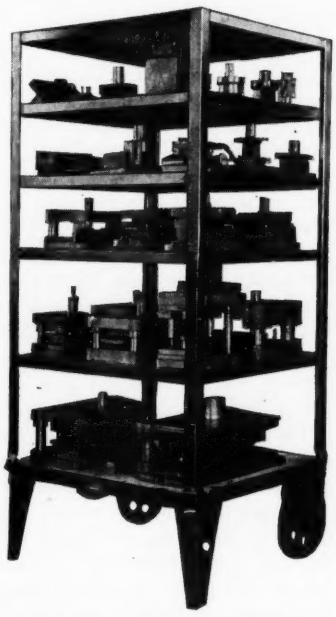


"DELIVER THE BIN AND SAVE THE HANDLING" saves hours of labor. Wooden-side or All-steel Bin Sections, Racks, Trays, and Die Tables fit on the Turner Transport which is moved by hand Jimmy, power lift truck, crane or tractor.

These quickly movable Shelf Racks may be lined up side by side for vertical and horizontal expansion.

Double Productivity with

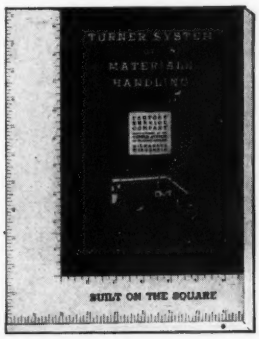
THE TURNER SYSTEM OF MATERIALS HANDLING



There is no waiting for dies when they are stored on the Die Racks which fit on the movable Transport.

- **Streamlined Storage**
- **To-the-ceiling Stacking**
- **Instant Mobility**

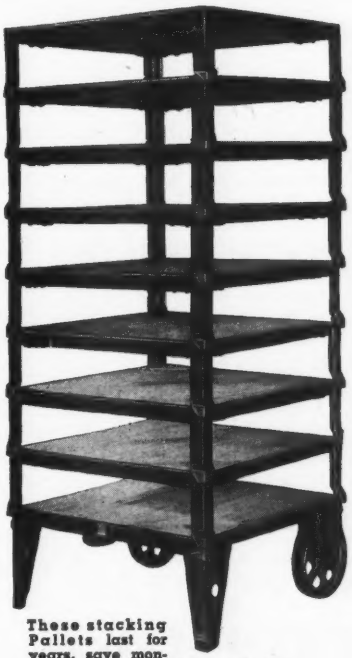
CUT SPACE, LABOR AND EQUIPMENT COSTS UP TO 50%



Complete Information Now Ready for You In this New Book

Twenty-four page book illustrates and describes exclusive plan for 100% factory standardization.

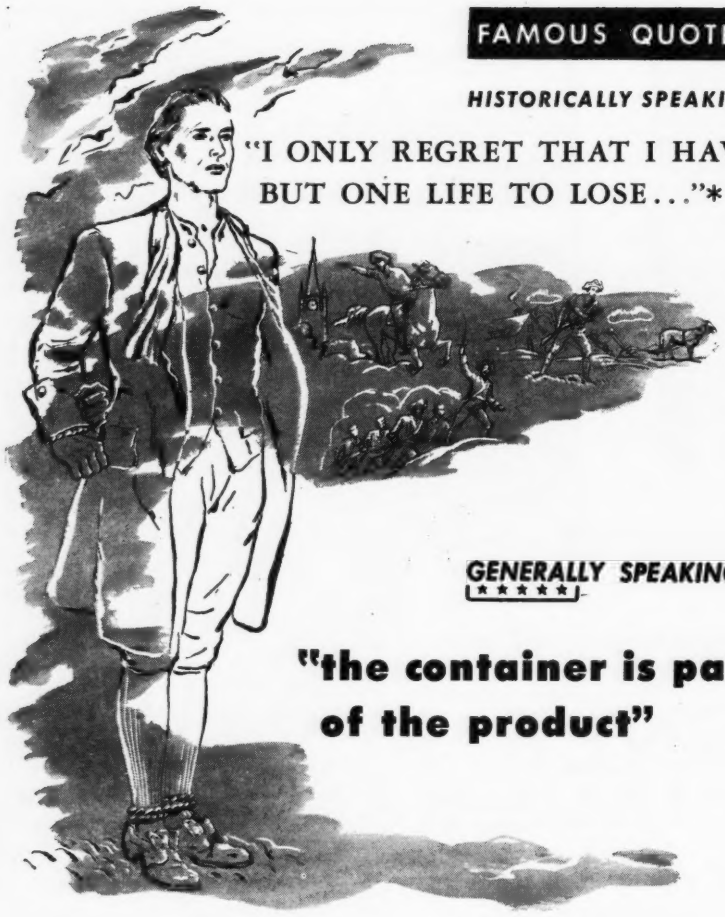
Send for your copy of the FREE Turner System Book Today!



These stacking Pallets last for years, save money, increase efficient handling.

FACTORY SERVICE COMPANY

4607 NORTH TWENTY-FIRST STREET — **MILWAUKEE 9, WISCONSIN**



FAMOUS QUOTES

HISTORICALLY SPEAKING

"I ONLY REGRET THAT I HAVE BUT ONE LIFE TO LOSE..."*

GENERALLY SPEAKING

★★★★★

"the container is part of the product"

This means that General Engineered Shipping Containers frequently come down the production lines with the product, as "part of the product." Result: increased production, substantial savings in space, materials, and man-hours.

Furthermore, General Boxes are designed specifically for the product—whether it is large or small, odd-shaped or uniform, fragile or sturdy. We are specialists in designing compact, lightweight, extra-strong containers for hard-to-pack items.

Write us today. Our engineers will be glad to help you solve your packing problems. New copy of "The General Box" is just off the press. It is yours free upon request.

**Nathan Hale (1756-1776)—Every school boy remembers him as the hero of the American Revolution who said: "I only regret that I have but one life to lose for my country."*

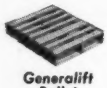
General Wirebound Crate

General Nailed Box

General Cleated Corrugated Container

General All-Bound Box

General Corrugated Box



Generalift Pallet

GENERAL BOX COMPANY ★★★★★

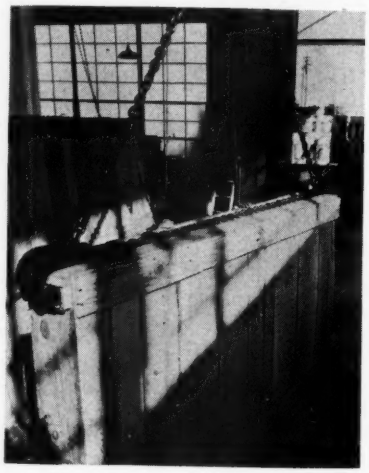
engineered shipping containers

GENERAL OFFICES: 60 West Illinois St., Chicago 10

DISTRICT OFFICES AND PLANTS: Brooklyn, Cincinnati Detroit, East St. Louis, Kansas City, Louisville, Milwaukee New Orleans, Sheboygan, Winchendon, Natchez.

Continental Box Company, Inc.: Houston, Dallas.

made the pressure sinks the cleats into the wood blocks, as shown in one of the illustrations. The load



CHAIN GRAB. Cleated jaws lift 4000-pound containers during transfer by hoist.

is held securely during the transfer.

Motor truck loading and unloading is done at the opposite end of the high bay area in the same manner.

Shipping and receiving by means of highway vehicles is also done at a second place. This is a depressed dock, where 2000-pound fork trucks are used in the operations.

After stock has been received inside the plant, further handling depends on its size and type. Plate glass, because of the size of sheets (some are 220" x 126"), is unpacked in the open receiving area. Individual sheets are removed from the cases, labeled, and stored. For transfer to storage special dollies are used. These long, narrow load carriers have two wood wheels, axle mounted, at the center and single casters at the ends. The carrying surface has a felt-lined groove to accommodate the edge of the plate.

These dollies support the huge glass sheets safely and can be easily maneuvered into the aisles between the upright storage racks. The racks, wider at the bottom than at the top, give support to the entire side of the glass sheet as it stands in a leaning position. Vertical storage in the racks, 30 feet long and 11 feet high, enable the company to profitably use the 13'9" headroom of the area.

All plate is stored by size, with largest sheets nearest to the open

(Turn to page 84)

PACKAGING MECHANICS SECTION

A regular monthly section in which are presented solutions to the problems of efficient filling and handling the boxes, cartons, bags, bottles, cases, etc., used in commerce and industry.

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Packaging Expo to Show Way to Greater Efficiency, More Profits

17th Packaging Exposition and Conference, the largest in American Management Assn.'s history, is expected to attract 20,000 users of packaging machinery, materials and services to Cleveland, April 26 to 30.

MORE than 200 exhibitors are preparing to show the latest developments in materials, machinery, design and services at the 17th annual Packaging Exposition and Conference, scheduled in Cleveland, April 26 to 30.

The largest event in the history of the packaging industry, the 1948 Exposition will occupy more than 100,000 square feet of floor space in the Cleveland Public Auditorium. The exhibit has been extended to five days at the request of exhibitors because of the huge attendance in Philadelphia last year. The additional day will give visitors more time to see all of the new equipment and materials of interest to them.

Show, Conference Hours Divided

Extension of the 1948 show has permitted a re-arrangement of the hours for the concurrent Conference on Packaging, Packing and Shipping in order to eliminate any conflicts. Conference sessions will be held during the mornings only on the first four days. They will end at noon when the Exposition doors will open.

Thousands of packaging executives, engineers and technical experts are expected to attend the discussion meetings.

Conference sessions are in charge of Henry Howlett, AMA secretary, and are expected to cover management aspects of materials, methods and merchandising.

Exhibits Open At Noon

The exposition will open at noon on the first four days. Closing is scheduled at 6 P.M. on Monday, Tuesday and Thursday, and 10 P.M. on Wednesday. With no conference session listed on Friday, the closing day, the exposition will open at 10 A.M. and close at 3 P.M.

Arrangements for the Packaging Exposition are being made by the Exposition Exhibitors' Advisory Committee of which Alan S. Cole, New York, is chairman. Other committee members are: A. B. Clunan, manager, Direct Packaging sales, Pliofilm Department, The Goodyear Tire & Rubber Co., Inc., Akron; J. M. Cowan, manager for market development, The Dobeckmun Co., Cleveland; N. A. Fowler, director, Sales & Research, General Box Co., Chicago; Robert D. Handley, advertising manager, Sylvania Division, American Viscose Corporation, New York; Roy E. Hanson, vice president, Milprint, Inc., Milwaukee; E. J. Heimer, president, Barrett-Cravens Co., Chicago; M. P. Junkin, sales manager, National Metal Edge Box Co., Philadelphia;

(Continued on page 85)

17th AMA Packaging Exposition Exhibitors

A-B-C Packaging Machine Corp.
Acme Steel Co.
Alden Plastic Corp.
Aluminum Co. of America
Alvey Conveyor Mfg. Co.
American Can Co.
Amsco Packaging Machinery, Inc.
Arabol Mfg. Co.
Armstrong Cork Co.
Associated Cooperage Industries of America

Bagprint Machinery Corp.
C. D. Baird & Co.
Bakelite Corp.
Barrett-Cravens Co.
Bemis Bro. Bag Co.
Bensing Bros. and Deeney
Better Packages, Inc.

F. N. Burt Co.
Carry-Pack Co. Ltd.
Carter Engineering Co.
Celanese Plastics Corp.
Cello-Masters, Inc.
Celon Co.
Central States Paper & Bag Co., Inc.
Chaspec Manufacturing Co.
Chisholm Ryder Co. of Penna.
Cleveland Container Co.
Consolidated Lithographing Corp.
Consolidated Packaging Machinery Corp.
Container Corp. of America
Container Equipment Corp.
Crown Cork Specialty Corp.
Crystal Tube Corp.

Derby Sealers, Inc.
Diagraph-Bradley Industries, Inc.
P. H. Diffenbaugh Co.
Dobeckmun Co.
Doughboy Industries, Inc.

Dow Chemical Co.
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Eastman Kodak Co.
Economic Machinery Co.
Einson-Freeman Co., Inc.
Elgin Manufacturing Co.
Exact Weight Scale Co.

Facile Corp.
J. L. Ferguson Co.
FLOW
Decotone Products Division, Fitchburg Paper Co.
Food Industries
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Gaylord Container Corp.
General Box Co.
General Container Corp.
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Kimberly-Clark Corp.
Kimble Glass Co.

The Lakso Co.
Lamson Corp.
Leeds Sales Co., Inc.
L. Link & Co., Inc.
Lynch Package Machinery Corp.

MRM Co.
Machinery Service Co.
Manhattan Paste and Glue Co., Inc.
M. Mann & Co.
Marathon Corp.
Marsh Stencil Machine Co.
Merchants Box Co.
Mid-States Gummed Paper Co.
Miller Wrapping & Sealing Machine Co.
Milprint, Inc.
Minerva Wax Paper Co.
Minnesota Mining & Mfg. Co.
Modern Packaging
Monsanto Chemical Co.
Kenneth J. Moore & Co.
Mosstype Corp.
Multistamp Co., Inc.

Nashua Gummed and Coated Paper Co.
Nasko Machinery Corp.
National Adhesives
National Metal Edge Box Co.
National Wooden Box Assn.
New Jersey Machine Corp.

Ohio Boxboard Co.
Oliver Machinery Co.
Owens-Illinois Glass Co.

Package Machinery Co.
Packaging Parade
Packing & Shipping
Pack-Rite Machines
Paisley Products, Inc.
Paper Package Co.
Peters Machinery Co.
Pilliod Cabinet Co.
Pneumatic Scale Corp., Ltd.
Potdevin Machine Co.

Radio Corp. of America
F. B. Redington Co.
Reynolds Metals Co.
Riegel Paper Corp.
W. C. Ritchie & Co.
A. H. Ross Co., Inc.
Roto Bag Machine Corp.
Thomas M. Royal & Co.
Gustave Rubner Inc.

Scandia Mfg. Co.
Seal-Spout Corp.
Shellmar Products Corp.
Sherman Paper Products Corp.
Shipping Management, Inc.
Shumann Equipment Co.
S. K. Smith Co.
Simplex Wrapping Machine Co.
Standard-Knapp Corp.
Stein-Hall & Co.
Stoffel Seals Corp.
Stokes & Smith Co.
Sun Chemical Corp.
Sutherland Paper Co.
Sulvania Division, American Viscose Corp.

Taber Instrument Co.
Tompkins' Label Service
Triangle Package Machinery Co.
Troth, Bright, Page
Packaging Division, E. W. Twitchell Inc.

Union Bag & Paper Corp.
Union Special Machine Co.
United Board & Carton Co.
U. S. Automatic Box Machinery Co., Inc.

Vac-Spray Machine Corp.

Waxed Paper Institute, Inc.
H. G. Weber & Company, Inc.
Weinman Brothers, Inc.
Frank W. Winne & Son, Inc.
Wolverine Paper Converting Machinery Corp.
Wood Conversion Co.
Wrap-Ade Machine Co., Inc.
Wright's Automatic Machinery Co.

Solution to a Carton *Preparation* Problem

Problems of carton preparation multiply without the proper planning. This manufacturer of metal fasteners has standardized on relatively few types of packages for literally thousands of products. If your problem is one of carton preparation, this description may suggest more than one useful idea.

WHEN a company packages thousands of different sizes and types of items—in this instance, metal fasteners—carton preparation looms as an important part of the over-all packaging job. This description tells you how it's done at The National Screw and Manufacturing Co. of Cleveland, one of the largest producers of industrial fasteners. The items include nuts, bolts, screws, rivets, cotter pins, tacks and many specialties. Daily production averages between 12 and 15 million pieces.

A skillful job of planning box sizes and types was accomplished, resulting in 37 variations which are adequate for all of the 300 different items usually being packaged daily. Another requirement in package preparation is that items of one type may be packaged in a half dozen different sizes of containers for various users. The company's production is broken down into two main categories—original equipment for manufacturers, shipped in bulk, and packaged small lots for use by hardware and mill supply distributors. Paper carton preparation is a complex operation requiring close coordination and planning for efficiency. For an average day's output of 300 different items approximately 50,000 cardboard containers will be used.

For sales appeal purposes, the cardboard containers are printed in two colors (a recent trend in hardware packaging). No part numbers are printed on them; instead, labels are used for reasons of flexibility. A total of 36,000 standard types of labels are kept in stock, permitting the same type cartons to be used for a large variety of items in different sizes.

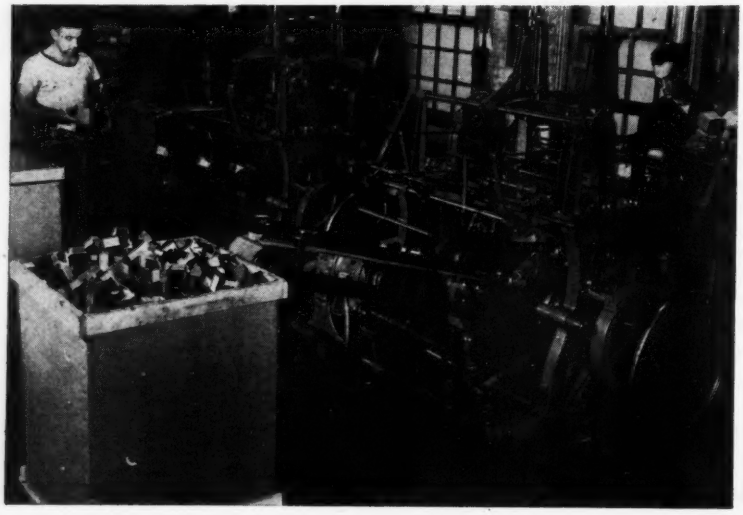
To warehouse the 37 types of paper boxes already set up would require much more room than could be allotted for this purpose. The stock is purchased flat and the sizes are set up as needed. Two box making machines were purchased, each capable of setting up and gluing 50 solid fibre board half-cartons per minute. The units are of the telescoping type, two halves making one complete box.

The die-cut stock is placed in a feeding jig at the rear of the machine, as shown in one of the photos. The individual panels are picked off by two plungers, which also apply the glue to the sides of the stock. A short belt conveyor transfers the panel to the forming station, where a descending die forms the box in one stroke. The disposal of the completed units is also shown in one of the photos. The cartons fall onto a moving belt conveyor and are thus delivered into the storage container positioned at the discharge side of the box making machine.

By use of the box making machines, National Screw is enabled to carry a four-week supply of the flat stock and only a three-day supply of the bulky setup containers. Space economy is therefore realized.

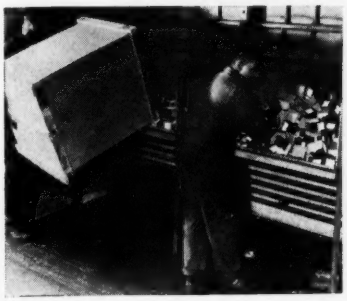
The storage containers used

HIGH-SPEED BOX MAKING machines set up and glue boxes. Note delivery conveyors, containers.



NAILING MACHINE is nailing case bottom. Operation is done in two passes per case.

merit detailed comment. This unit is constructed of solid fiberboard sides and bottoms with wooden reinforcements, resulting in a lightweight container for the light bulky loads. They are conveniently stacked manually, three high. The over-all size of the containers is 30″ wide, 30″ long and 36″ high. These containers hold from 115 to



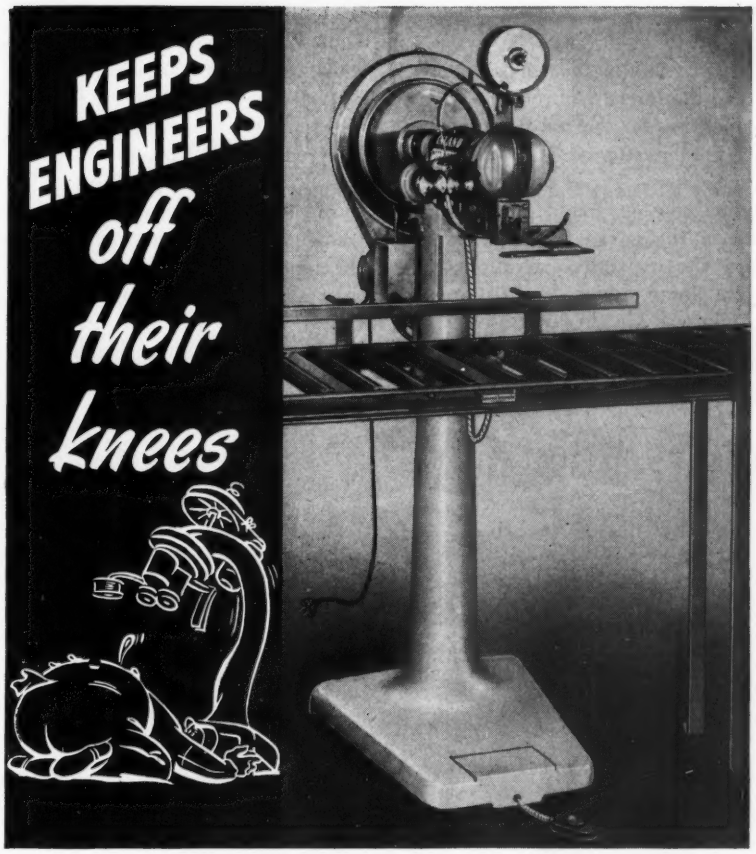
THESE CHUTES DELIVER set-up boxes to packaging on lower floors of an adjacent building.

3500 boxes, the average being 2000 cartons per container.

Noteworthy is a control feature used in the carton preparation department. Standards have been set up which indicate the number of pieces of each of the various sizes in a storage container, and thus no count need be made of individual boxes.

The boxes are made and stored on the fifth floor of one building and must be sent to the packaging departments on the third and fourth floors in a building located across an area way. The transfer is readily made by gravity metal chutes connecting the three points. As shown in one of the photos, the full storage containers are emptied onto V-shaped tables attached to the chutes.

Because of the large number of sizes and the large volume of boxes involved, accurate controls must be maintained in feeding the required units to the proper floor. Telephone contact is maintained between packaging and the box storage department. Needs are telephoned, and quick delivery is made. The arriving boxes are dis-



All Working Parts on the

INLAND SPEED-STITCHER

Are Above Waist Level

The only reason any engineer would ever have for "getting on his knees" to the Inland Speed-Stitcher *would be to give thanks!*

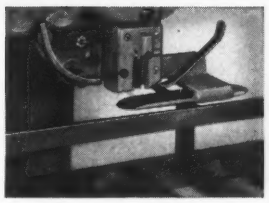
From waist-high level to floor there are no moving parts—in any model. One man can service it without a helper. In most cases, due to simplicity of design, the operator can make all running adjustments quickly, easily, without delays in production.

Runs Itself! Starts, Stops, Automatically!

The Inland Seam Stitcher starts and stops stapling as the carton enters and leaves the stapling point, through electric Solenoid switch which mounts in your conveyor. Stitcher shoe guides carton flaps into position, holds them through the stitching operation.

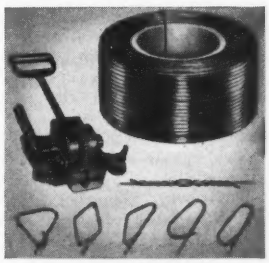
Speed Stitching NOW in All Models

Learn all about this big improvement in stitcher design. 42 other outstanding, precision engineered features. Write for descriptive circular showing all models—Manual Seam Stitcher, Bottom Stitcher, Straight Arm and Combination Stitcher. We can fulfill delivery promises.



Here's Speed Stitching!

One set-up—seam stitches bottoms of empty cartons, then seam stitches top of same carton when filled, without change. Starts and stops stapling itself, through Electric Solenoid built into conveyor. Operator merely guides cartons through!



Now! Inland SPEED-FLO Wire

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Improved "T" Model Wire Tying machine now available, and full line of Inland Tag Fasteners.

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charged into the metal baskets shown.

In the box making departments, wood-reinforced fibreboard containers were previously used for temporary storage and supplying the packers. These were not found sufficiently serviceable for the hard use in the packaging department, and the expanded metal baskets were later adopted as standard equipment for this purpose. They combine light weight with strength.

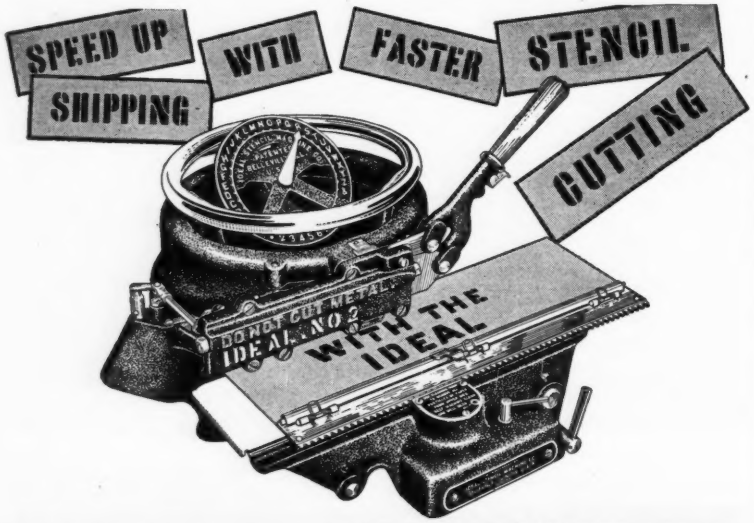
As can be seen from one of the photos, these baskets are stored on a three-shelf rack adjacent to each delivery chute. These racks are long enough to permit storing at least one metal basket of each of the 37 types of boxes prepared in the packaging department. For transferring the material from the racks to the packing benches, a 1-2-1 castered floor truck was designed with a low deck on which four containers can be loaded.

While this covers the actual carton preparation, a few additional points are described regarding

IN PACKAGING DEPARTMENT, boxes are received from chute in these light-weight metal baskets.

efficient handling of outgoing packages beyond this department. After the packages have been filled, labelled and closed, many are placed in wooden cases for shipment.

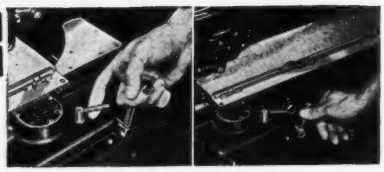
Twenty-two sizes of such boxes are used. These are ordered in knocked down condition, thus using a minimum of storage space. The cases are fabricated semi-automatically by use of two nailing machines. The machine shown is so constructed that it can handle any of the 22 sizes. One machine is set to nail the four sides together, while the other one nails the bottoms. The case shown in the photo is having nine six-penny nails driven into it simultaneously. The machine's capacity is 400 cases per day, thus avoiding both the extra time and effort of hand hammering. Many hundreds of cases are machine nailed and shipped weekly. (A large number of fibre cases are also used.) By the application of sound industrial engineering principles, employing high-capacity box making machines, appropriate storage containers and positive delivery methods, including a minimum number of box sizes for a vast variety of items, made flexible by use of labeling, the over-all operation is reduced to a few relatively simple steps that assure a constant supply of empty boxes to the point of use.



AUTOMATIC CARRIAGE ACTION

and 8 other ways better.

- **EASY-TO-FOLLOW POINTER** — Large red-tipped letter indicator.
- **MINIMUM MARGIN GRIP**—Saves as much as 20% in stencil board use.
- **READING-ANGLE DIAL**—At a 45° angle to avoid eye strain and errors.
- **VISIBLE CUTTING**—No blind guesswork —reduces errors and stencil waste.
- **LARGE DIAMETER HAND WHEEL**—Spins and stops effortlessly.
- **AUTOMATIC WORD SPACER** — Handle trigger does it automatically.
- **SHORT STROKE, EASY GRIP HANDLE**—For speed and ease-of-operation.
- **SELF-ALIGNING**—Regardless of cutting speed, lines are always straight and parallel.
- **SAFETY HOOD**—Protects operators hands and encloses machine from dampness and dust.



At the end of a line—a flip of the shift lever automatically returns it to the starting point.

It's ready for the next line—with a slight touch of the automatic thumb lever.

Instead of cumbersome roller movement, the Ideal has rapid carriage action that instantly positions the stencil for each line—no manual "stencil fumbling"—it's all automatic and precise. That's why even the untrained worker can't go wrong with the Ideal Automatic Carriage Action—*speed and accuracy come easy to the Ideal operator.* Speed up your shipping with the Ideal—only Ideal has Automatic Carriage Action.

Write for your copy of the Ideal Shipping Guide and full particulars on the Ideal Stencil Machine

IDEAL STENCIL MACHINE CO.

104 IOWA AVE., BELLEVILLE, ILL.

Packaging Two *Half Loaves* In One

The small family can now buy small loaves of bread, yet the baker sells a large one. Two halves are individually wax-wrapped and combined together in an outer wrapper. Clever packaging is done with standard equipment.

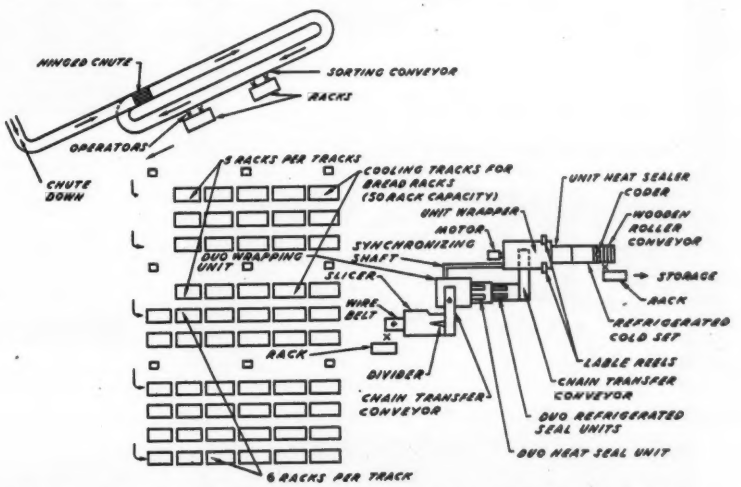
IN RECENT times, industry has modified many products for use by the smaller family, and bakeries have likewise paid attention to this trend. A smaller loaf of bread for the smaller family was the original solution. A more recent development has been to divide a large economical loaf into two halves, each wrapped separately and with both halves contained in a single-unit package. This type of package is being produced by the Jacob Laub Baking Co. of Cleveland. As a result of this new packaging method, it is now possible for the consumer to purchase the less expensive 18-oz. loaf and still have the equivalent of two small loaves, each kept fresh in its waxed paper package. To put it another way: the new packaging technique has made possible a larger unit sale for the bakery while at the same time serving the smaller family.

An 18-oz. loaf contains 22 slices, or 11 in each half-package. The development of this duo-pack naturally resulted in new packaging problems, and their solutions are here presented as they have been worked out at Laub bakery.

The bread is delivered from the several ovens to a central sorting conveyor, where operators transfer the common types of loaves to castered racks. These, 29″ wide, 72″ long, and 66″ high, have a capacity for 270 loaves. The nine shelves have woven-wire surfaces for cooling purposes. As many as four different kinds of bread are routed from the central sorting conveyor, which is oval.

Two overhead chutes discharge the bread on the latter. The conveyor bed consists of wooden slats which are wide at the outside, narrow at the other. This allows the conveyor to make the two 180-degree turns at each end. The drive mechanism is connected to a chain, which is attached to the center of the conveyor bed, supplying the motive power. The wooden slats are supported by angle iron guides at each side of the line.

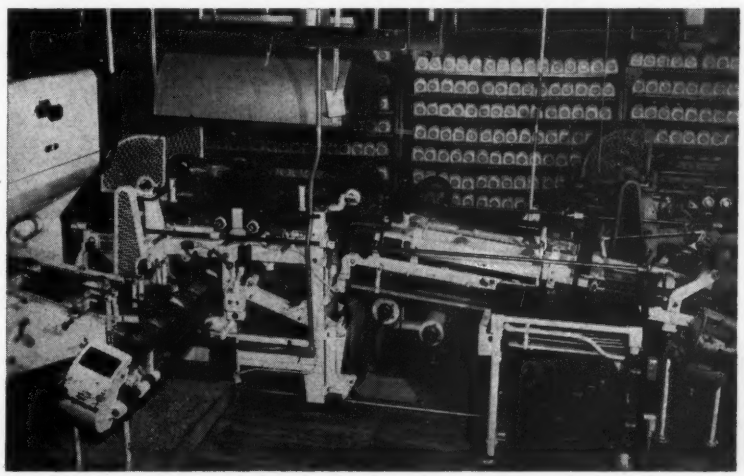
The connection between the oval conveyor and the two overhead chutes is another feature. Because operators will miss some loaves, it was necessary to construct the connection so that the missed bread would continue circulating on the line. A number of light sheet metal strips attached to the end of each chute provided the solution. The flexible strips raise when a loaf passes beneath, permitting its passage. The loaves being discharged lower the strips to the sorting conveyor level.



DUO-PACK UNIT with loaf divider, transfer, heat, and cold seal units and the loaf converger.

Metal runways between the conveyor and the slicing and wrapping machines serve for intermediate storage of the racks containing the loaves, which must be cooled. Steel plates with angle iron tracks keep the racks in alignment. Nine tracks

LAYOUT provides short travel distance for concrete and for pipe during operations.



NEW MARSH Electric

STENCIL MACHINE

Here it is . . . the first *Electric* Stencil Machine! Cuts perfect stencils with effortless movement, amazing speed, lower cost per stencil. Std. 1/6 H. P. motor, works in any light socket at less than 2c per hour. Three size machines 1/2", 3/4", 1". Write for catalog and prices.

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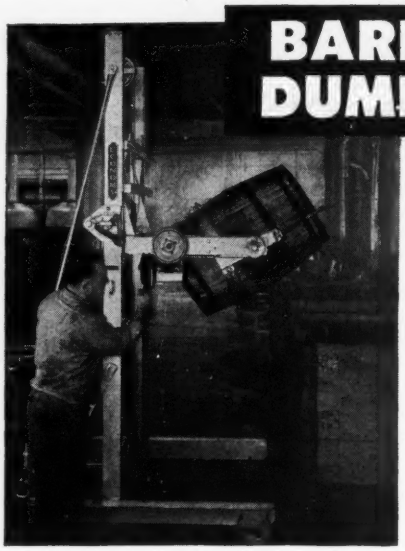
BARREL DUMPER



FOR HANDLING A BARREL, DRUM OR SKID

An efficient method of lifting and dumping barrels is provided by the Economy barrel dumper. A special cradle and tilting winch holds the barrel at any angle for draining.

Cradle and winch can be detached for skid handling, using the platform arms alone. The Economy line of portable lifters range from 500 lbs. to 5000 lbs. capacity and up to 60 ft. lift. Special equipment engineered. Complete catalog on request.

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GREATER EFFICIENCY! MORE ECONOMY!

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You can save time, reduce breakage and rejects, step up production and reduce plant operating costs by installing an efficient A-F *Engineered* Conveyor System in your plant! Whatever your handling needs, A-F Engineers can show you how to bring "endless stream" efficiency to your production lines. Write, without obligation, today!

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METAL PRODUCTS CLEANING EQUIPMENT

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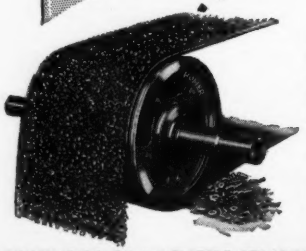
Homer "PERMANENT" NON-ELECTRIC MAGNETIC SEPARATORS

Available in standard widths from 4" to 26". Special sizes made to specifications. All HOMERS have self-insulating decks, with covers to protect powerful permanent magnet assemblies. Homer Permanent Magnetic Separators are "low-cost" protection against TRAMP-METAL damage.



Available in standard diameters of 12", 15", 18", 20", 24" and 30", with belt widths from 12" to 60". Homer Permanent Magnetic Pulleys can be used at head end or as idlers in belt conveyor systems and are furnished with or without shaft. Write for bulletins on HOMER "non-electric" Permanent Magnetic Separators.

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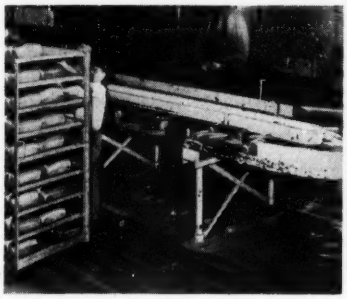
PERMANENT MAGNETIC SEPARATORS — PLATE TYPES AND PULLEYS

accommodate 50 racks containing 13,500 loaves, and this arrangement permits the coolest loaves to be fed first to the next operation.

The 72-inch long racks have four swivel casters for maneuverability, each with a 4" diameter wheel. The loader places four to five loaves at one time on the conveyor feeding the slicing machine.

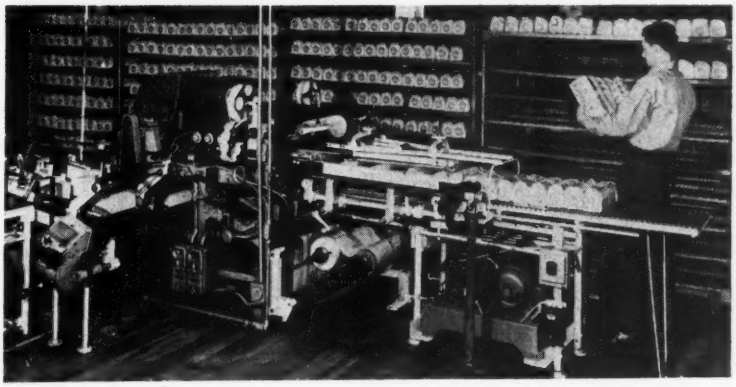
The latter is a conventional band



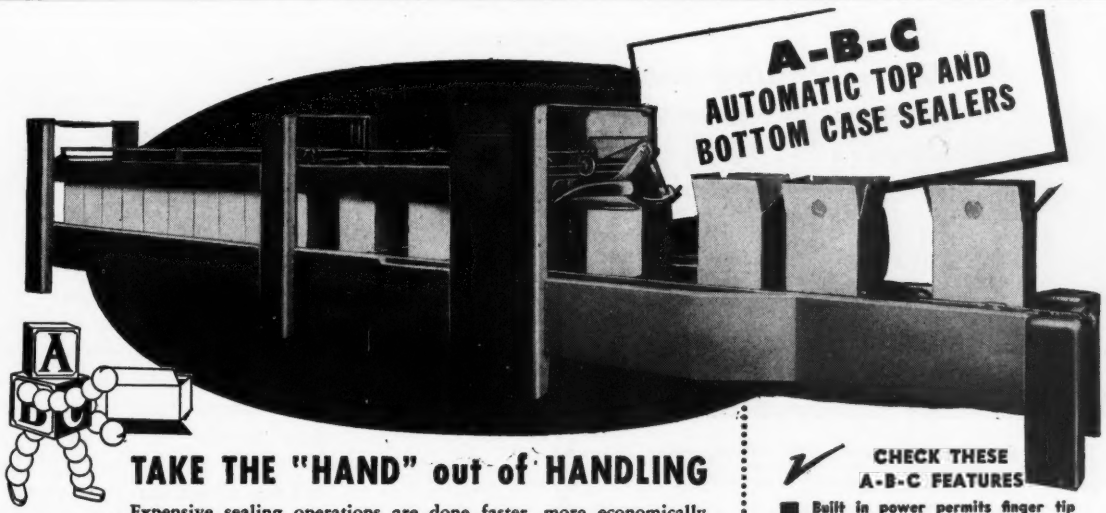
CASTERED STORAGE RACK is loaded with loaves circulating on oval slat conveyor, at right.

type, the width of the slices being determined by the spacing of the bands. When the bread is discharged from the slicer—and this introduces the start of the new packaging technique—each loaf is divided in the center by a V-type deflector. Two identical halves of the same loaf are the result. A short length of chain-mounted metal flights moves them to a transfer chain conveyor. These two conveyors are synchronized, as are subsequent ones, to prevent jamming.

The transfer conveyor is provided with cradles into which each half loaf is deposited. At the end of this line the inner waxed paper liner is applied, wrapping the two halves as they are raised to the higher sealing level. Immediately after the folding, the bread is passed between and over heat seal plates which melt the wax in the paper, thus sealing it. To insure a good seal, the last flap at each end of the loaf is not set until the first heat sealing units are passed over. Two flared guides tuck in the last flap just before each half loaf



OUTER WRAP with end table, "zipper" tape, coding table and the refrigeration unit.



TAKE THE "HAND" out of HANDLING

Expensive sealing operations are done faster, more economically with the streamlined A-B-C Top and Bottom Case Sealer. A recent installation in one plant saved $4000 the first year. Cases are sealed directly from the production line at speeds up to 60 cases per minute. It's all automatic. No operators required. Top inner flaps are tucked as bottom outer flaps are opened without disturbing contents of case. Glue is applied both top and bottom and outer flaps folded in place simultaneously. Compression unit with individual spring rollers applies even pressure to complete the sealing job. Unit can seal top flaps only or bottom flaps only. A-B-C specializes in building packaging machinery exclusively. Let an A-B-C specialist help solve your packaging problems. Write A-B-C PACKAGING MACHINE CORP., Dept. F4, Quincy, Ill.

CHECK THESE A-B-C FEATURES

- Built in power permits finger tip control
- Simple, sturdy construction for minimum down time . . . low maintenance cost
- Adjustable to wide range of case sizes by pressing a button
- Glue applicator and compression unit supported at 4 points for even pressure
- All main drives ball bearing equipped—geared head motors

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OTHER A-B-C PRODUCTS
Automatic Top Sealer • Automatic Side Sealer • Semi-Automatic Bottom Sealer • Hand Glaer • Glass Container Case Packer

Increased Profits
thru controlled production

WHY play a guessing game with production count when **PRODUCTIMETERS** will give you the exact count of machine output?

THEY eliminate profit-eating "guesswork" . . . provide accurate records for all departments.

INSTALL them to register count of pieces . . . lineal feet . . . bottles . . . cases . . . or revolutions! There's a unit for practically every industrial need.

Send now for Reference Bulletin No. 100 — in concise form it describes and illustrates over 100 standard counters.

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passes over the final heat sealing units. Both adjustments of the sealing units have separate thermostatic controls, which are set at 475 degrees F. because of the type of wrapping paper used.

To hasten the cooling time, refrigeration units are next in line. The half loaves are conveyed through these side by side on two parallel lines which are identical in every detail. Beyond the refrigeration units, the separate handling ends.

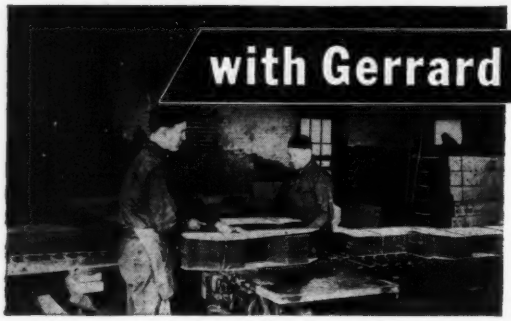
The two half loaves are joined by means of converging guides. The application of the outer wrapper is the next operation. This is done with the same method —wrapping, heat sealing, cooling— as mentioned before. Differences are only those of detail. While the heat sealing units on the half-pack are at the same temperature, those on the final pack line are set at different degrees—550 and 200 degrees F., respectively. The reason is the heavier paper. This refrigeration section is also

Mechanically Speaking

An interesting problem which confronted the manufacturers of this type of duo-pack machinery was the synchronization of the two wrapping machines. This was accomplished by driving both wrapping machines with a single 2 H.P. 220 Volt 60 cycle motor. The transmission used is a variable type with a three to one ratio. A power take-off is effected from the second to the first machine, insuring complete synchronization. The cooling units used each have their own motor and condensing unit, and employ the use of Freon. They are provided with a variable temperature adjustment and are usually set so that a slight film of frost is present on the cooling box.

Save binding time . . . cut costs

with Gerrard Steel Strapping



Shingles are bundled easily and quickly with the semi-automatic "Q" model. One operation of the machine tightens, ties and cuts the strapping . . . makes a firm, neat package.

Piston sleeves palletized for convenient handling are held firmly in place with Gerrard Round Steel Straps. Gerrard Strapping is galvanized . . . highly resistant to corrosion in transit.

ALL Gerrard machines tension, tie and cut the strapping . . . you don't have to bother with seals or crimping. Simple, easy operation speeds binding procedures, keeps conveyor lines moving rapidly.

Saving of time and material with Gerrard Round Steel Strapping effects a substantial reduction in packaging costs.

A wide range of wire sizes permits the use of Gerrard Steel Straps to bind and strengthen light parcel post packages or carload shipments of steel pipe and plate, drums, crated machinery, and all types of palletizing.

The services of Gerrard engineers are available *without cost* to help you solve your packaging problems. Write for our free books, *Blue Book of Packaging* and *Red Book of Carload Stowage.*

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2939 West 47th Street, Chicago

USS STEEL — UNITED STATES STEEL

equipped with a top as well as bottom belt conveyor, the top one counteracting a tendency of the loaves to roll. The coding table is adjacent to the last operation. The loaves are removed from a wooden roller conveyor and again placed into racks.

A clever provision in the outer wrapper is designed to facilitate the opening of the complete bread package. A red cellophane tape is applied with the outer wrapper at the time the two halves are wrapped into a single unit. The user merely pulls this tape "zipper" to separate the two individually wrapped halves. And one of these remains fresh in its wax wrapper while the first one is being used.

Thus a standard loaf is packaged in the form of two small ones. The small-family user can purchase it economically. Drying out of the "second loaf" is avoided, contributing to food conservation. A clever adaption of available equipment thus met a new need.

SIMPLER . . .

to fasten merchandise to cards to assemble cartons, seal bags, etc., using Hansen Tackers and Staplers.

SIMPLER . . .

to operate: drives tacks one-hand as fast as you can squeeze handle. Holds scores of tacks at one loading.

SIMPLER . . .

to get more efficient shipping room and assembly line operation by using durable Hansens to speed the job. Investigate today.

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ECONOMY ON WHEELS

Universal Couplings consist of a male and female unit on alternate ends of section. This permits inserting a section into line with either end forward. Thus avoiding necessity of turning sections end for end as frequently required with other types of couplings. Curves can be reversed without reversing adjoining straight sections.

Free-running Logan Wheel Conveyors permit full use of the economical power of gravity. This wheel-type Logan Conveyor is ideal for portable use, or may be utilized at any place where light-weight products are to be handled.
Very lively ball bearing wheels operate with minimum grade, which is a distinct advantage in many instances.
Any object having a solid and reasonably firm bottom, such as cartons, cases and tote pans can be readily handled.
Other features are ease of setting-up which permits advantageous use in loading and unloading cars, also easy storage if such is desired in off season.
The Logan universal coupling feature is described above. Logan quick adjustable supports are another rapid set-up feature. Write for literature on Wheel Conveyors, or on Logan general industrial type equipment.

It cradled the nation—
It paces our progress—
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WHEEL
Logan Conveyors

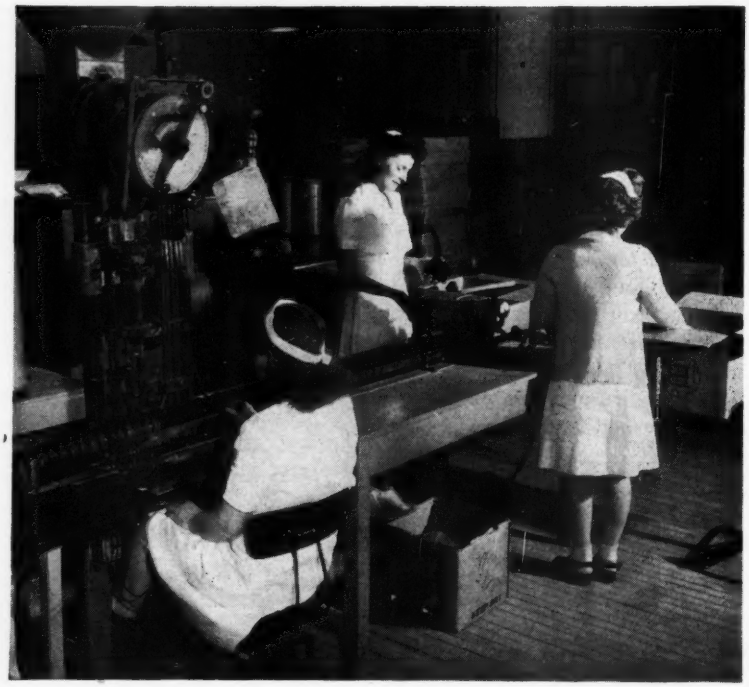
LOGAN CO., INC., 558 CABEL ST., LOUISVILLE 6, KY.

Flexible Packaging *Line* for Pharmaceuticals

Numerous types of pharmaceuticals in tablet form are packaged on this one line—in small lots or large.

COATED and uncoated tablets are among the products made by Cleveland's Strong-Cobb & Co., Inc., manufacturers of pharmaceuticals. Produced in a large variety of types, the tablets are packed in bottles of numerous sizes and shapes. The production-packaging line therefore had to be designed for handling numerous products in a large assortment of containers.

Another problem had to be considered in its planning. It had to be capable of filling and packaging a single product running as high as 18,000 bottles in an eight-hour shift, or each of several different products in relatively small quantities. If the bulk of the tablets had been produced on a volume basis, specialized machinery would have been provided to speed the operation for each type. Since this was not the case, the filling-packaging line had to be designed for the highest possible capacity as well as flexibility of operation for small-lot operation.



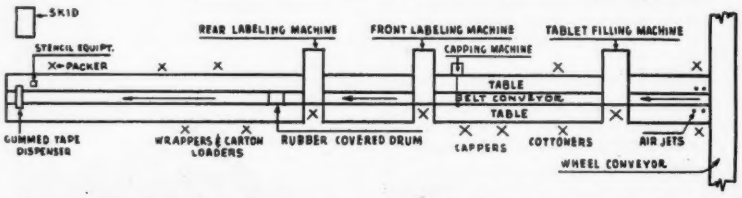
FOUR AT A TIME. Empty bottles go from containers via cleaning to the filling machine.

Motion Economy a Key Point

This description covers the filling and packaging of coated vitamin tablets, which are but one of 24 items handled on this line. The requirement is to fill 96 tablets into 2½-ounce amber blake bottles having a 28 mm. screw cap finishes. The production schedule calls for 18,000 bottles per eight-hour shift. As can be seen from the flow chart, the filling, capping, labeling, wrapping and packing are all done on one straight line. The empty bottles are fed from a gravity wheel conveyor running at right angles to the main line. The empties are received in the second-floor packaging department in cartons, each containing 19½ dozen bottles, 16 cartons per skid load. The cartons are placed as needed on the 12-foot section of wheel conveyor which feeds to the main line.

The wheel conveyor is mounted on low stands, bringing the top of the cartons to a convenient working height for the operators. Two operators remove the bottles, each girl taking two in each hand and blowing them out with compressed air. The units are then deposited on a runway leading to the tablet filling machine. Good motion economy is obtained at this station with the provision of two compressed air jets for each girl. The jets are close together, enabling each operator to blow two bottles

STRAIGHT LINE. Diagrammatic sketch shows location of operations and equipment.



simultaneously. A refinement is the air release valve mounted around the spout of each jet. The valves are actuated simply by pressing the mouths of the bottles against them.

The two operators at this station govern their speed to the filling machine, located about six feet from this point. The bottles are slid the short distance on a steel plate which has two adjustable guides.

Four bottles are filled simultaneously with 96 tablets each. The tablets are loaded from fibre drums into the hopper of the filling machine. A revolving paddle-type mechanism transfers the tablets from the hopper and positions them over the top of each of the four filling tubes. The latter are solid except for a slit down the front, the opening being just large enough to permit visual inspection of the tablets by the filling machine operator. Another purpose of the slits is to permit the insertion of retaining fingers to stop the flow of tablets at the point at which they are set, while the tablets below the fingers are released into the bottles. The fingers are mounted on a sliding mechanism, allowing variance in the number of tablets dropped at each pass. (Two passes are required for 96 tablets.)

Good motion economy is also practiced by use of a foot-operated control, which keeps the operator's hands free to position the empty bottles beneath the tube spouts and to push the filled ones to the left. They are then slid to a table belt conveyor (see photos) which carries them through the next three operations.

First, cotton wadding is inserted from coiled strips. This is done by two operators seated next to each other, each of whom applies the wadding to two of the four bottles passing by on the line. (The units come in lots of four from the filling machine.)

Capping is next. As can be seen from one of the photos, the bottles now pass into an adjustable steel guide which holds the units, making it unnecessary for the capping operators to pick up the bottles for application or tightening of the caps.

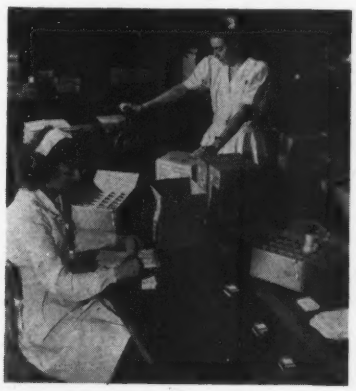
The first capping operator positions and starts the caps on the bottles, handling two bottles, one with each hand in a synchronized motion, as shown. The second operator uses an electric cap tightener, which is suspended over the center of the line from a castered holding fixture. This mobile unit can be shifted when necessary.

A Method for Many Products

The next operation is to apply the front labels, which is done by a semi-automatic labeling machine. The latter is served by an operator who removes the full bottles arriving at her right. She positions the bottles in the holding fixture of the machine, then removes the labeled units with her left hand, placing them on a table belt conveyor for transfer to the second labeling machine, which applies the rear label.

LABELING. Front labels are secured to rounded contour of bottle by rubber drum.

The third photo in this series shows the back labeling machine. The speed of the labeling operation merits a few detailed observations. The labels have a varnished finish and are placed in a cartridge at the rear of the machine. A pneumatic finger picks off one label at a time, passes it over a revolving glue dispenser and spots it on the bottle. An overhead clamping device then descends on the bottle and label, pressing the two together and thus securing the label. In disposing of the units, the operator at this machine places the bottles horizontally, with the front label up, on the belt to the packing station.



PACKING. Operator in rear uses adjustable gummed paper dispenser, giving proper lengths of tape for containers of all sizes.

However, one other detail of la-

(Continued on page 50)

THREE STEPS. Cotton wadding, capping, tightening. Bottles are held between steel guide.

Making Light Work of HEAVY JOBS

FORK TRUCKS, BELT & DRAG CHAIN CONVEYORS, ELECTRIC HOIST, GANTRY CRANE

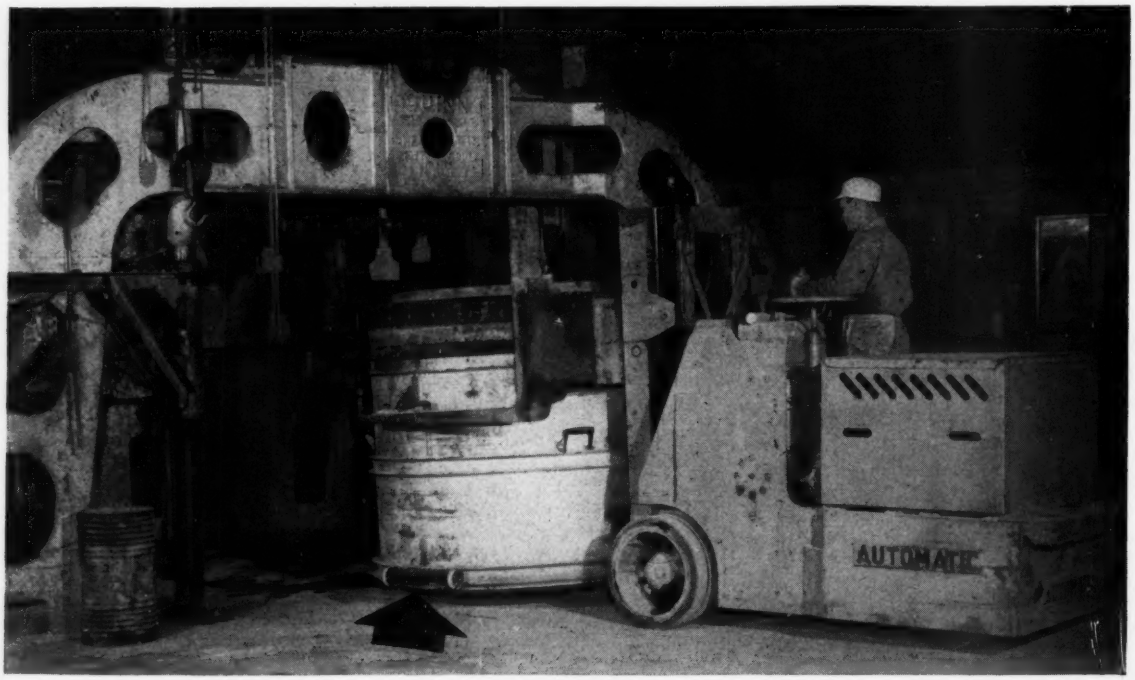
The manufacture of concrete pipe traditionally involves work calling for extra-heavy physical exertion—and high labor turnover. This pipe handling system has lightened the burden—and is keeping workers on the job.

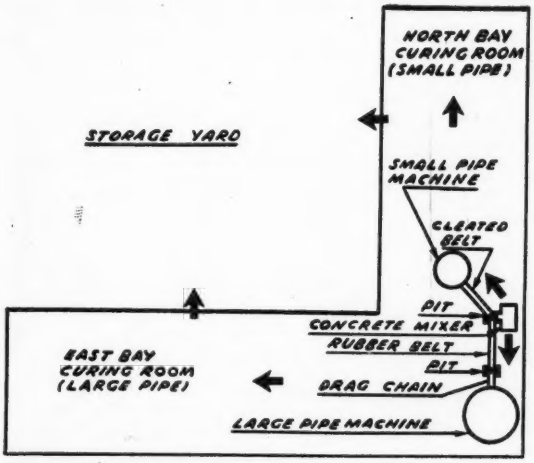
A MODERN material handling system may be installed for any one of a number of specific purposes. Frequently this is to realize a cost reduction, to utilize overhead space being wasted, to protect materials vulnerable to damage, or the specific reason may be (among many others) to eliminate muscular effort in order to create better working conditions that will reduce labor turnover.

This last mentioned reason was the purpose behind the material handling program developed by the Connecticut High Test Sand and Gravel Co., Hamden, Conn., which makes reinforced and non-reinforced pipe ranging in diameter from six to 60 inches. This description covers the handling of the larger pipe.

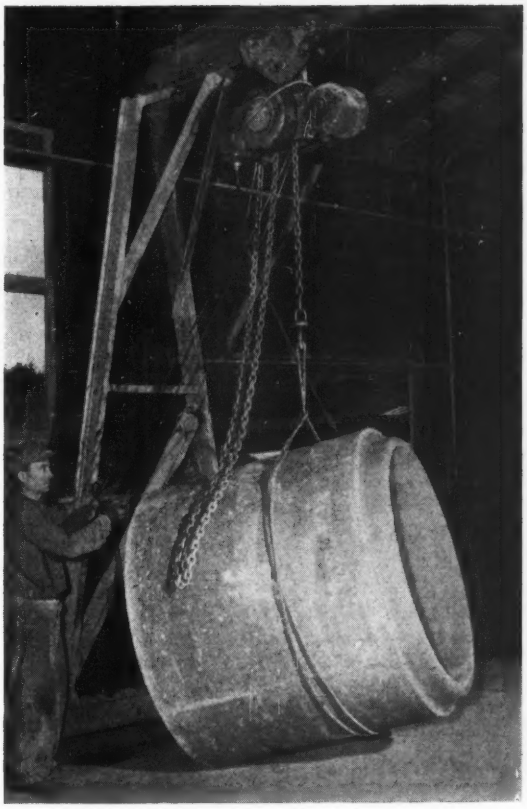
As in any other concrete pipe company, the production equipment sets the limit to the number of units that can be produced per day. But the handling equipment employed determines if the job is to be a muscle-training one or one that is relatively easy. The company's present material handling

5000-POUND LOAD. Fork truck moves 48" mold to curing. Arrow shows dual wheels for easy job.





LAYOUT provides short travel distance for concrete and for pipe during all the op-



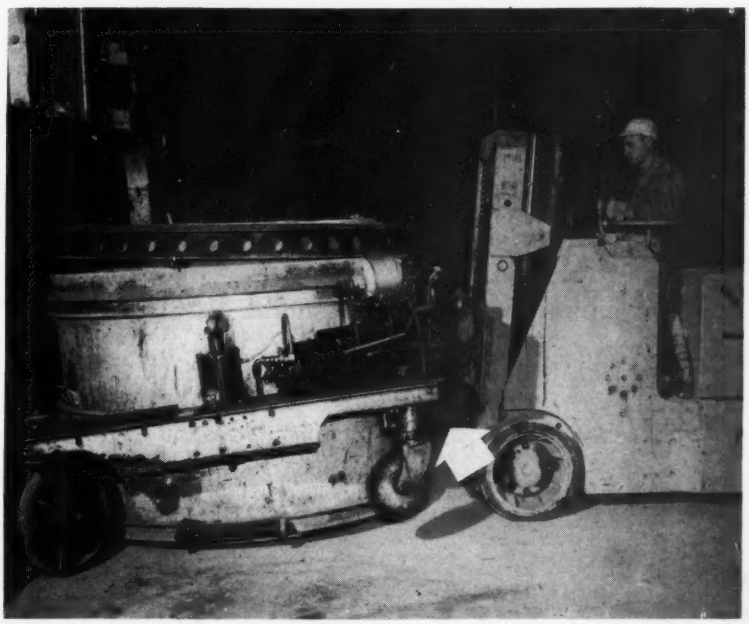
UPSETTING electric hoist on gantry crane upsets cured pipe; another hard job is eliminated.

system has reduced physical effort to a minimum, and both layout and handling details are noteworthy for their efficiency.

The single concrete mixer in use is located at the junction point of the two bays that are joined at right angles to make an L-shaped building. Sand and stone are fed to the mixer from gravity hoppers, and the stockpile of cement bags is within reach of the operator stationed at the 21 cu. ft. mixer. As the flow diagram shows, the concrete is routed to either of the two concrete pipe machines from the centrally located mixer, as follows: 1. To the machine in the north bay: the concrete is dumped into the hopper at the base of the mixer via chute, when it is picked up by a cleated 21″ x 20′ belt conveyor and delivered to the concrete pipe machine which makes the units in diameters from six to 21 inches. 2. To the machine in the east bay, making pipe from 24 to 60 inches in diameter: the concrete is discharged directly from the mixer on a belt line (see photos) that runs about 24 inches below the discharge door. (In this case, the chute leading to the pit at the base of the mixer is removed.) This 24″ x 30′ belt carries the concrete to the pit of the larger of the two machines (whose product is the specific subject of this description). From this pit a drag chain conveyor running in a 12″ trough moves the concrete to the pipe mold at the top of the machine, which uses a tamping process.

When the mold on the turntable at floor level has been filled, the re-

TOWING FIXTURE, arrow. Fork truck tows 7500-lb. load, eliminating muscular effort.



ROSS Heavy Duty LIFT TRUCK handles frames "by the bundle" at Ford's Lincoln plant.

Here's typical ROSS performance. It's the kind that has convinced one manufacturer after another that ROSS is *the* lift truck they can depend upon to solve their big-load handling problems most efficiently.

Remind those responsible for *your* materials-handling operations to investigate ROSS Heavy Duty LIFT TRUCKS. Three types, six models. Capacities, 5,000 to 18,000 pounds. Gasoline power. Pneumatic tires.

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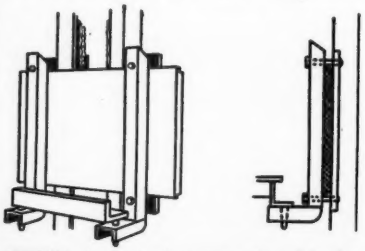
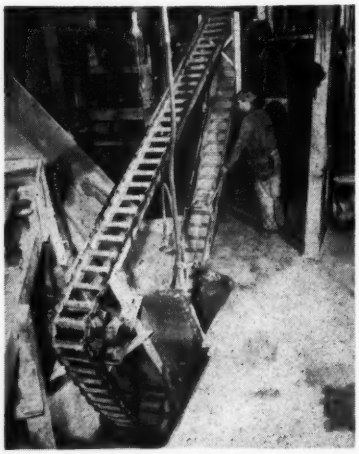
sult is a heavy unit which, if handled manually, practically requires a giant's strength. The empty mold for a standard four-foot length of



SKETCH shows simple construction of towing fixture used for moving 60-inch molds.

48-inch pipe weighs 1500 pounds, the concrete in it 3500 pounds, or a total of 5000 pounds for the unit. The mold for a 60-inch pipe weighs 2000 pounds, the concrete 5500 pounds, or a total of 7500 pounds. The moves to the curing room from the machine range from 25 feet to a maximum of 100 feet.

Here are the two different methods used for handling the molds up to 48 inches and those of 60-inch diameter. The molds have a lug on each side for lifting purposes, which has been traditionally done with manually operated off-bearing carts on the diameters up to 48 inches. For the considerably larger and heavier 60-inch pipe a four-wheel cart is employed which has a lifting lever on each side. One man is required at each handle. After the heavy unit is hoisted into position, several men used to push the heavy load away from the machine. With five standard lengths produced by the machine per hour, the job involved the utmost physical effort



HANDLING CONCRETE. BELT, left, delivers to hopper, drag chain to mold of large pipe machine.

on the part of the operators, who naturally tended to gravitate to easier work elsewhere.

FORK TRUCKS are also widely applied in yarding. This 15,000 model is moving pipe from curing.

In view of the high rate of labor turnover, the management sought a method that would minimize the back-breaking part of the job. After a study of the problem and a survey of available material handling equipment, a 6000-pound fork lift truck was decided on for handling pipe from 24 inches to 48 inches in diameter from the machine to the curing room. Other equipment and accessories were also adapted and developed to facilitate various phases of the work.

The forks are adjustable sideways on a 1⅝" steel plate, 77 inches wide and notched at the top, which is attached to the truck mast. The notches at the top of the plate permit the forks to be adjusted to the widths of the variously sized molds handled. Adjustment is at a minimum, since the machine produces a given size of pipe for at least a day or more.

The fork truck has completely done away with the hard labor that used to be involved in handling the units with the manually operated carts. The fork truck operator picks up the full 48-inch mold and transports it to the curing room.

For the 60-inch pipe, the four-wheel carts are still used, but in this case the fork truck has likewise minimized the former need for physical exertion. The truck has been adapted for towing purposes.

A special towing fixture was designed, one for each side of the lifting plate. The two units of the fixture are made of heavy six-inch channel iron, as shown in one of the photos. A 5½" length of the same channel iron is welded at right angles to the bottom of the vertical member. The projecting piece has a two-inch hole drilled through its end, and these openings engage the two tapered pins that extend from the frame of the cart. With the truck doing this part of the job, it is no longer necessary to employ a crew of men to push the loads from the machine. Thus better utilization of operators' productive time has resulted, with a margin to spare for maintenance and good housekeeping.

In the curing room, an oblong space 24 feet wide, the molds are immediately stripped. (The inside core has been previously removed by electric hoist at the pipe machine.) Tussling with the heavy molds was also a back-breaking job. After the outer forms were opened the two sections had to be dragged a maximum distance of 100 feet back to the pipe machine.

To avoid this drawback, two wheels (on a common axle) were attached to the bottom of each section of the form. Now these sections can be rolled, which requires a fraction of the effort that was necessary previously.

Upon completion of the three-day curing process, the concrete pipe standing on its circular pallet must be upset so it can be rolled into the adjoining yard. Here again specific devices—a manually propelled gantry crane and a 2000-pound electric hoist—do the job with ease and safety to the material.

This equipment is also shown in one of the photos. The crane spans the width of the rectangular area and the tracks run the full length of the room. Thus the unit is quickly positioned to make the pipe in any part of the room accessible to the hoist mounted on the I-beam.

The upsetting is done with wire rope slings, as shown. The sling is attached to the upper half of the vertical pipe and threaded over the hoist hook. As the lift is made, the pipe is unbalanced and it is then laid on its side by lowering the hook. The upset pipe is rolled a few feet to the adjacent storage yard, which slopes toward the trailer loading dock near the center of the space.

The material handling system developed at the Connecticut High

LOADING by fork truck is credited with savings in loss through breakage, in time and effort.

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MATERIAL HANDLING
EQUIPMENT

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PARTS BOX

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Brusco Boxes are fabricated from heavy gauge steel sheets, corrugated for extra strength and reinforced with heavy steel angles. Legs have skid plates for easy moving. Standard sizes:

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Depth 18", 24" or 30"

Boxes equipped with card holders for stock records.

Orders or inquiries should specify quantity, width, length and depth of box desired. Also state underclearance required and estimated weight of load. We are able to fulfill any special requirements.

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DEP'T 40 GRAND RAPIDS, MICH.

Test Sand and Gravel Co. has made light work of a once heavy job that called for the utmost physical exertion. Now workers are machine tenders instead of load movers. As a result, labor turnover has been reduced to a negligible minimum.

In large yards, fork truck handling is extended from the curing rooms or kilns to the yard areas. Illustrations of this part of the operation are included here from other plants. One photo shows a pneumatic-tired heavy-duty fork truck yarding two lengths of pipe. Since these fork trucks also stack the pipe, maximum use of available yard areas can be made. This may be an important factor at certain times of the year even in fairly extensive yards.

Another photo shows a fork truck loading two lengths of pipe simultaneously on a trailer. This type of handling has proved its worth in yards throughout the country reporting savings in time, effort and dollars. These reports also stress the advantage of reduced loss through breakage by use of fork truck handling.

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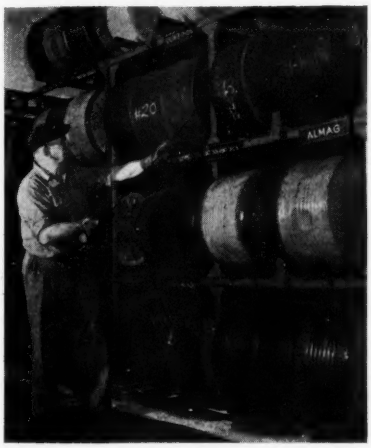
CHIP DISPOSAL . . .

(Continued from page 5)

is heated to 180 degrees F., and then centrifuged. The last operation removes foreign matter consisting of a carbon-like sludge, thus returning the cutting oil to fit shape to be used again for its coolant purpose. After it has been used a number of times and the sulphur content becomes low, the oil is returned to the refinery for resulphurizing.

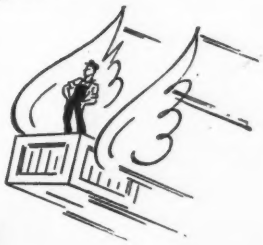
Still being retained in an overhead position, the oil is drained into drums which are removed by fork truck to an adjacent barrel storage room. Steel racks are provided for the drums, as shown in one of the photos, equipped with small pivot-lug stops which hold the containers in place. When rotated from vertical to horizontal, the lugs permit the drums to be removed or added. Since the bottom of the lugs butt against the supporting channel to which attached, positive locking is assured.



DRUMS of reclaimed oil positioned in steel storage racks. Arrow shows swivel drum-stop.

"What will the savings be?" This question usually arises before installations such as the two described are put into effect. According to company officials, the saving of salvaged oil alone is as much as 225 gallons per shift of twelve hours. This should more than prove that these operations are worthwhile. By handling the chips in a systematic progressive disposal method, not only clean, neat housekeeping is the result, but the material actually takes on added value when delivered to mills.

Engineered to move materials with SPEED SAFETY EFFICIENCY



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The CYCLONE Model M High speed heavy duty hand hoist. 96% efficient. 1 ton capacity weighs only 35 pounds. Sealed in lifetime lubrication. Capacities from ¼ ton up.

The COMET Portable, speedy, sturdy electric hoist. One-hand control. For plug in on 110, 220 or 440 volts. Capacities from ⅛ to 1 ton.

The METEOR Fast, heavy duty electric hoist. Airplane type cooling. Push button control. Single or two speed. Capacities from ½ ton up.

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- The Portable Belt Conveyers are strongly built and equipped with quality rubber-tired wheels. The conveyers can be easily and *safely* adjusted by one man.
- You can't beat this handling team. There is nearly a half century of experience behind Mathews portable equipment. It is designed right, built well, and readily available.
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FLEXIBLE LINE . . .
(Continued from page 43)

beling must first be completed. Because the front of the bottles has a round and irregular contour, the edges of the front label have not been fastened to the container. This is done by a revolving drum covered with sponge rubber, which, positioned over the belt conveyor, presses against these labels and peens them over. The drum is power driven and revolves at a speed consistent with that of the belt conveyor. A roving inspector, by the way, is constantly checking on the quality of the work being performed.

The next step is to wrap each bottle with tissue paper (to protect the varnish finish on the labels). This wrapping is omitted when plain labels are used. Two operators, one on each side of the belt conveyor, are used for the tissue wrapping and subsequent placing of the bottles into cardboard containers. The full cartons are pushed on the moving belt (after placing an inspection tag in it). The inspection is made for cotton wadding, secureness of caps, labels and the condition of each bottle.

Flexibility Throughout

The duties of the last operator in the line are to seal carton tops with glued tape, stencil the side of the shipping container, and then place it onto a skid or pallet for delivery either to the warehouse or shipping department. This operator, incidentally, also places an inspection slip into the carton before sealing, this check being for quantity only.

The tape dispenser used is a semi-automatic one which strips off and moistens a predetermined length of tape. The use of this equipment again illustrates a detail designed for flexibility. The length of tape desired can be adjusted to suit the requirements of the containers.

Good production practice is also illustrated in the stenciling operation. The taped cartons are set on their sides and are stenciled when three or four are accumulated,

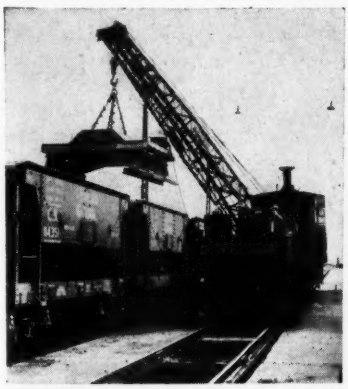
avoiding the need for frequent job changes at short intervals. A fountain-type stencil brush is used for the speedy application of ink.

As stated previously, completed shipping containers are placed either on skids or pallets. The reason for this dual practice is that the Strong-Cobb Corp. uses both the low-lift truck and the fork truck methods. In the packing department, where the skid method is used, the pallets are spotted on skids for transfer to the first-floor warehousing and shipping departments, where the fork truck method is employed.

If material being packaged is to be shipped immediately or in the very near future, then the shipping containers are placed on skids. If the goods are to be warehoused, they are placed on pallets, as described. On the first floor, the pallet loads are picked off the skids and tiered for utmost space economy by high-stacking fork trucks.

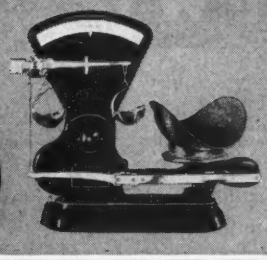
As explained earlier, the methods described here apply also to more than 20 other products that are packaged on the same line. Equally important as the equipment employed are the production techniques and motion economies. These two combine into a high-volume setup for larger and smaller lots, handling either with equal efficiency.

50 TONS OF COAL EMPTIED IN TWO MINUTES. Hopper bottom railroad cars are emptied of packed or frozen coal within a few minutes by use of the new Robins Car Shakeout, shown in action at the Canadian

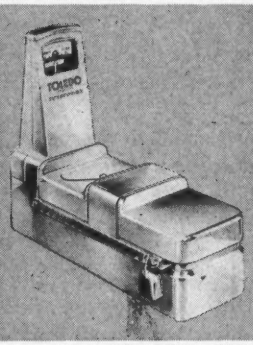


National Railways, Port Arthur, Ont. The electrical powered material handling machine is placed on top of a loaded car, a button is pressed to start an electric motor. A seismic action results and the coal flows out the bottom of the car.

Control Costs



COUNTING SCALES—These Toledos count large quantities of small parts fast . . . ACCURATE. Eliminate slow and inaccurate hand-counting.



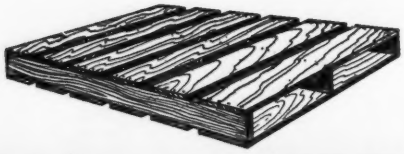
OVER-UNDER SCALES—The Speedweigh saves time and cuts costs in packing, filling, check weighing.

PORTABLE SCALES—Highly versatile . . . these Toledos are world's most widely used portable dial scales.

Whether it's weighing, counting, force-measuring, batching, testing or any problem in weight-control . . . it's a job for accurate Toledo Scales! They'll help you control costs, improve product-quality and increase production. Send for bulletin No. 2020. Toledo Scale Co., Toledo 12, O.

TOLEDO

HEADQUARTERS FOR SCALES

ON THE  PALLET

NEWS · VIEWS · TRENDS

ATTENTION, colleges and universities. Here is an outline of subjects covered in the material handling course given last year by Cleveland's Fenn College. The course met one evening per week, two hours per evening for 16 weeks. Moving pictures and slides were used, and occasionally authorities in special fields addressed the class. A number of inspection trips to industries in nearby areas were arranged as part of the curriculum. Following are the specific subjects listed for discussion in the Fenn College outline:

1. Growth and development of the material handling industry. 2 Fork lift trucks—gas and battery powered. 3. Floor-operated material handling equipment. 4. Overhead carrier systems—including cranes, hoists, monorail systems. 5. Pallet system—development of the "load unit" principle. 6. Cost analysis of material handling operations. 7. Plant layout. 8. Equipment standardization. 9. Organization of material handling department. 10. Warehousing methods. 11. Multi-story building operation. 12. Conveyors. 13. Product packaging. 14. Receiving and shipping department operations. 15. Handling bulk materials. 16. Railroad shipments. 17. Assembly line operation.

H. P. LADDS, president of The National Screw & Manufacturing Company, Cleveland, announced that National Screw has purchased The Chester Hoist Company of Lisbon, Ohio. This unites one of the largest makers of nuts, bolts, and screws with an organization that manufactures a complete line of spur gear hoists and trolleys, equipped with Timken Bearings, ranging in size from ¼ ton to 40 tons; also a complete line of differential hoists. As fasteners and hoists are usually sold by the same distributor, this move will broaden National's line.

George Neilson Bolton has been named manager, Hal F. Wright, former president and principal owner of The Chester Hoist Co., will remain with the organization for a period. The Lisbon plant will be known as the Chester Hoist division of The National Screw & Mfg. Co.

SHIPMENT of the first of four G-E 6800-hp locomotives, most powerful continuously-rated electric locomotives in the United States, was begun to the Virginian Railway Company in January, according to G. W. Wilson, manager of G.E.'s Locomotive and Car Equipment Divisions.

NINETEEN major problems, twelve of a general nature and seven on technical aspects, were to be considered at the second national Frozen Food Industry Exposition, which was scheduled at the Hotel Stevens, Chicago, March 15 to 18.

The exposition is under the sponsorship of the National Association of Frozen Food Packers, Washington, D. C. Representative companies manufacturing equipment, machinery, supplies, materials and services are exhibitors.

"ADVERTISING of toothpaste or steel, alike, is designed to build knowledge, confidence and desire; and in both instances, of these three, confidence is the most important," Henry E. Abt, President of the Brand Names Foundation, Inc., told members of the Chicago Industrial Advertisers' Association at a dinner meeting on January 12. He recommended a wider use of trade-mark advertising for industrial products.

TRAILMOBILE this year will introduce a number of completely new products, including a new van-type trailer that contains more than 35 new and exclusive features dealing with strength, weight, performance and convenience, appearance and ease of maintenance, in addition to a revolutionary development in long-life rustproofing.

EASTMAN KODAK CO. has announced it is developing a "photographic memory" for use by the Navy in a big electronic "brain" or calculator. The equipment, when completed, will be able to "read" and "memorize" mathematical data at superhuman speed a thousand number of 12 digits each every second.

THE American Society of Mechanical Engineers has announced the award of the 1947 Gantt Memorial Medal for "distinguished achievement in industrial management as a service to the community" to Alvin E. Dodd, president of the American Management Assn.

GEORGE T. CHRISTOPHER, president and general manager of the Packard Motor Car Company, told the Farm Equipment Institute, at its October 15 meeting in Chicago that American agriculture, industry and labor are equally to blame for the current inflation.

"Instead of cussing each other out, we should get together quickly and WORK our way back to safe

(Turn to page 81)

HOW AUTO MAKER CUTS SHIPPING COSTS

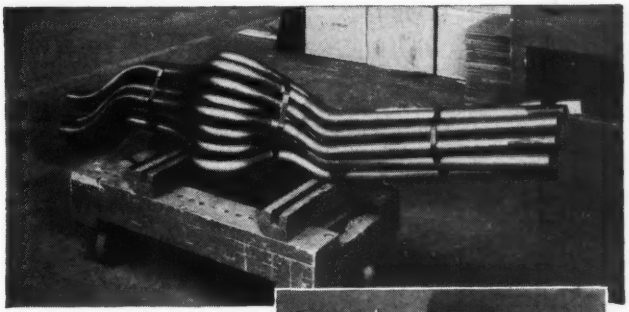
Nash Motors Division uses low-cost Acme Steelstrap to speed units to production line.

The Milwaukee Parts Plant, Nash Motors, Division of Nash-Kelvinator Corporation, relies upon Acme equipment and material to handle its bulk packing problems.

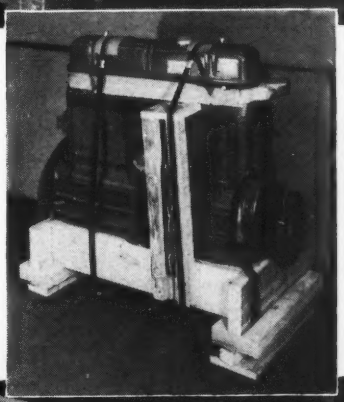
Acme Shipping Specialists helped Nash engineers devise packing operations that materially reduced costs and facilitated movement and safe shipping of units between plants. (See the three examples of better shipping at lower cost on this page.)

Acme Shipping Specialists will be happy to consult with your company on specific or general problems of packing and shipping. They can help you, and without obligation.

Find out how Acme Steelstrap users in many industries now show a *profit* in their shipping rooms. Send for free case history booklet, "SAVINGS IN SHIPPING."

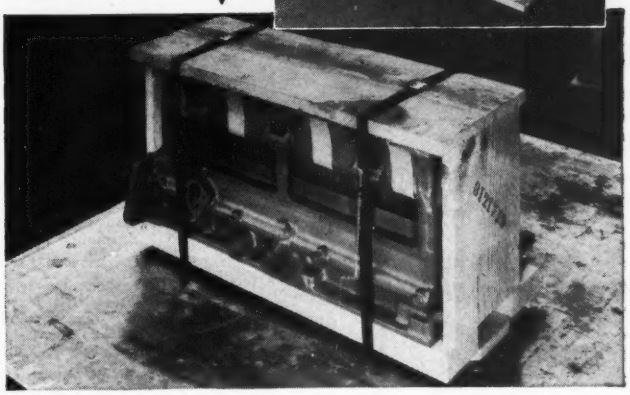


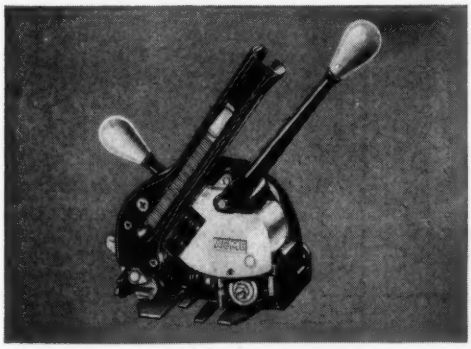
50% SAVED! Acme Uni-Pak, in which a bundle of tailpipes is wrapped with three bands of Acme Steelstrap, reduced packaging costs about 50%.



BETTER! Acme Steelstrap holds wood members in place and helps protect breather pipes. Steelstrap and two short pieces of strip steel firmly hold engine to skid.

75% SAVED! Present cost of packaging Nash engine cylinder blocks with Acme Steelstrap is only 25% of old method . . . labor and material saved!





NEW! More savings ahead with *Acme No. 3 Steelstrapper* —the lightest tool made. Magazine holds 100 seals. Tensions, seals, and cuts the strap in one operation. Small base requires only 5-inch strapping surface. Two levers working in opposite directions make for excellent balance and easy handling.

Acme Steelstrap

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MAIL THIS COUPON TODAY!

Acme Steel Company, Dept. F-28
2838 Archer Avenue
Chicago 8, Illinois

Please send me a copy of your case history booklet, "SAVINGS IN SHIPPING."

Name.....

Company.....

Address.....

City..... Zone.... State.....

ACME STEEL CO.
CHICAGO

TECHNICAL PAPERS PRESENTED AT SECOND MATERIAL HANDLING SHOW

Planned Packaging For Efficient Handling

By JAMES G. WITTE

Manager, Merchandise Preparation Division
Montgomery Ward & Co., Chicago

Packaging should be more carefully studied by U. S. industry. Protective qualities and display factors are only two phases of packaging; its greatest single function is to aid in the handling of merchandise.

The 1946 U. S. retail volume in packaged items was 83 billion dollars, or 50 billion dollars before retailers' markup. Industry purchased five billion dollars worth of packaging materials, paid five more billion for transportation from common carriers—totalling 20 per cent of the retail purchase dollar.

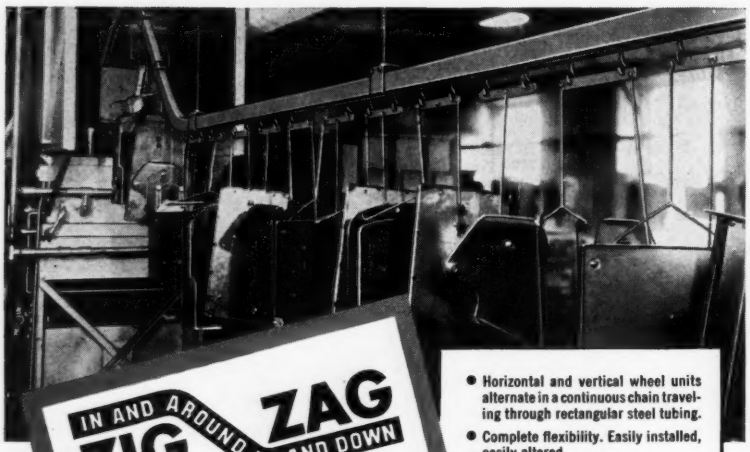
The third major item in this total distribution cost factor is handling within factories, warehouses, etc. This figure is estimated between 10 and 20 per cent of the retail dollar, making a combined total of from 30 to 40 per cent of the sales value of all packaged goods.

Montgomery Ward maintains a package engineering department along with material handling group. Vendors are furnished, without cost, packaging recommendations, resulting in reduced handling cost at Ward plants. Cost of handling is an expense item running into millions annually. Inefficiency therefore means a direct deduction from our net profit; with greater efficiency and less handling, our profit goes up. We try to package the same for mail order and retail; seal nearly 100,000 different items.

Following are questions considered when we plan a packaging program for our sources. Palletize straight car load lots at manufacturer's plant or at receiving point? If car is loaded to visible capacity, pallets reduce load. If car is below minimum weight, pallets may not increase freight cost.

A high percentage of goods arrives LCL or LTL. We ship cars to transfer points for distribution. Many points charge per package, for example, 40 cents for four loose

"Look-No-Hands"



IN AND AROUND UP AND DOWN
ZIG ZAG
Continuous Power Conveyor

for lower production costs

- Horizontal and vertical wheel units alternate in a continuous chain traveling through rectangular steel tubing.
- Complete flexibility. Easily installed, easily altered.
- SAFE—all moving parts fully enclosed.
- Low first cost. Low power factor.
- Load capacity: Single suspension 65 lbs.—multiple suspension 125 lbs. at 1-foot spacing; 250 lbs. at 2-foot spacing. Maximum total loading depends on length and contour.
- Standard horizontal or vertical curves —two-foot radius. (Stock load pendants including automatic turning units available.)

Hands, workers, payroll . . . and UP go production costs. But costly man-hours can be eliminated by installing Richards-Wilcox ZIG-ZAG Continuous Power Conveyor. With amazing flexibility and extreme simplicity ZIG-ZAG—a steel, tube-like track through which travels a specially constructed chain—will carry unit loads up to 250 pounds at speeds ranging from 1 inch to 60 feet per minute.

For maximum production efficiency at lowest cost, let ZIG-ZAG do the job—no hands! Get full details—write or call for free catalog A-83.

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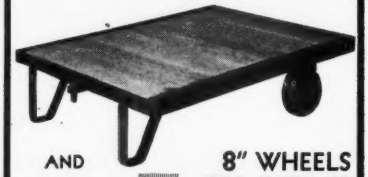
Richards-Wilcox Mfg. Co.
"A HANGER FOR ANY DOOR THAT SLIDES"
AURORA, ILLINOIS, U.S.A.

LANHAM
FOR
LIFETIME
RE-NU TOP
ROLLAWAY SKIDS



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STEEL, RUBBER OR
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2500 LB. CAP. & UP
HEAT TREATED AXLES AND
CONNECTING PINS.
BOLTED & WELDED DESIGN.
MERELY REMOVE BOLTS TO
REPLACE DECK BOARDS.

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TWELFTH AND
MAGNOLIA STS.
LOUISVILLE 10, KENTUCKY

boxes of hats. We strap four boxes together, pay only 10 cents for one package. There is a comparable saving in our own handling. Planned packaging pays.

Reserve Storage. This stock is palletized wherever possible, and the packaging method determines the possibilities. Heavy jacks, for example, were handled singly. Now they are banded, six to a unit, and can be palletized and stacked high.

Unpacking Merchandise. Instructions on how to pack merchandise plays an important part in the cost of unpacking. It's expensive to have to segregate 60 different varieties of one kind packed in a large box.

What is the Type of Examination required? There are packages that make it comparatively simple to examine, test and repack merchandise. No planning means wasted man hours. Proper packaging also saves cost of repacking for safety in shipping to customer.

What quantity should be packed? Study should start with the quantity the consumer buys, continue to wholesaler, end at production line. The reverse procedure has been haphazard, costly. This also has a bearing on consistent inventory policy. A smaller turnover per year can be more profitable than a higher turnover, if costly repacking is avoided merely to keep inventory down.

Order handling. By the weight of morning's mail we determine the number of the day's orders to be filled, and each order is scheduled. Items from 30 merchandise departments on six floors (for one order) all arrive at the same time at one place—because of proper packaging and handling.

★ ★ ★

Standardization of Handling Equipment

By D. H. BURTON
Bakelite Corp.
Bound Brook, N. J.

The subject of standardization is a controversial one. There is justification for argument on both sides. Many large companies have purchased a great variety of power fork lift and platform trucks of a variety of designs and sizes, all to do practically the same type of work, inquiries revealed. These reasons were given:

The war, shortages and priorities. We all had to grab anything that was available during those years. Salesmanship. A persuasive salesman can and often does influence a change in practice. Experience rating. Inexperienced people purchase equipment with too little knowledge of its life expectancy and capacity. This results in the purchase of some other make the next

DICO Float-Away BARL & DRUM TRUK

AMAZING Performance

One man handles heaviest drums all day with a "Float-Away" without usual fatigue. Unique in design—the wheels and axle never leave the floor when loading. Truck toes slide forward under barrel as carriage retracts to gently receive the drum. A light weight, perfectly balanced truck that never has to be lifted. Exclusive compression cylinder enables the truck to stand vertically—easy to store out of way—always handy. Unbreakable, adjustable chime hook for straight and bilged drums. Roller bearings, all metal or rubber tired wheels.

ASK YOUR JOBBER, or write

DICO CORPORATION
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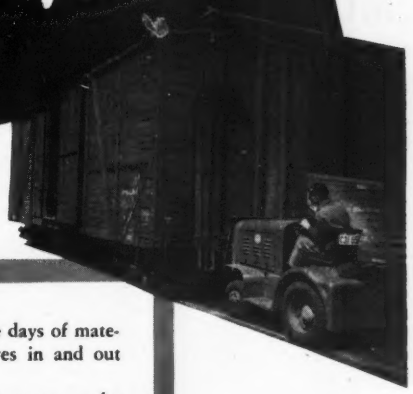
Keeps Tonnage Moving Fast!



More than ever it's vital in these days of material scarcities that tonnage moves in and out fast—with minimum cost.

So *Shop Mule* industrial tractors are at the peak of their popularity. Powered by the famous International engines, remarkably maneuverable, low in operation and maintenance, they sustain their reputation as America's most versatile industrial tractor.

CONDENSED SPECIFICATIONS MODEL J233 SHOP MULE

Engine—International GRD 233. Six cylinder, 3-5/16" bore, 4½" stroke. Clutch and transmission—single plate 10" dry plate clutch, selective sliding gear transmission, 3 forward and one reverse speed. Chassis—Steel plate, all welded structural. Heavy steel front fenders and bumper. Cast drive wheel fenders, dual pneumatic drive wheels. Length, overall, less coupler—102". Width, overall—66". Height, overall—61". Universal type coupler is standard. Drawbar effort—4500 lbs.

SHOP MULE INDUSTRIAL TRACTORS

W. F. HEBARD & CO.
CHICAGO 9, ILLINOIS

CREATORS AND MANUFACTURERS OF **SHOP MULES** SINCE 1918

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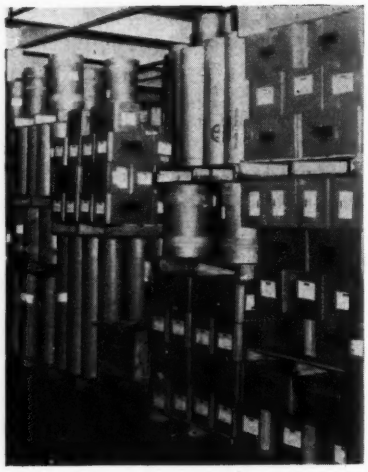
pallets to your specification

for Lower HANDLING COSTS



Morgan offers prompt delivery on quality pallets, custom-built to your exacting job requirements.

Our large facilities and wide experience, plus attention to construction details assure an economical pallet designed for longest possible service.

Specify Morgan pallets . . . your inquiry brings our prompt quotation.

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time. Price. This is no small factor, at least in initial sales, though it is doubtful if "price" effects follow-up or repeat sales.

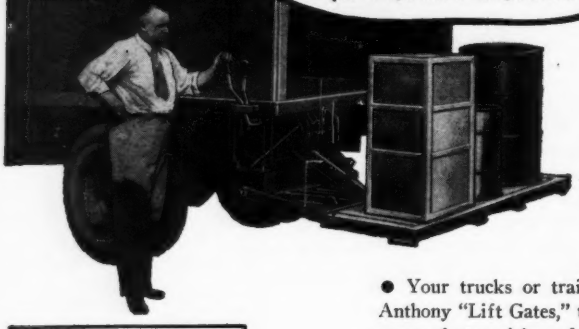
Each person consulted recognized the desirability of "standardization), chiefly because he had accumulated a variety of units and then experienced problems.

This discussion is not concerned with any specific design or make of equipment, but solely with the merits of standardizing in the adoption of a single design or make as opposed to a variety.

Arguments in favor of standardization. SAFETY. Unlike the automobile manufacturers, material handling equipment manufacturers have not standardized on operating controls or positions. Certain makes of trucks steer differently from others. Some are left-hand and some are right-hand drive. One type operates in speed by a pedal similar to the auto accelerator, while others operate by circuit breaker control with either left or right hand operation. One unit (tilts) by *lifting* a lever and elevates or lowers by *pulling* another lever.

Undoubtedly manufacturers could justify their designs and operating controls by technical explanations, but the supervisor has a problem in training men who have never handled such equipment. How can our warehouse crews operate safely when we furnish them with an

HOW TO CUT DELIVERY COSTS WITH "LIFT-GATES" (A PROVED PRODUCT)

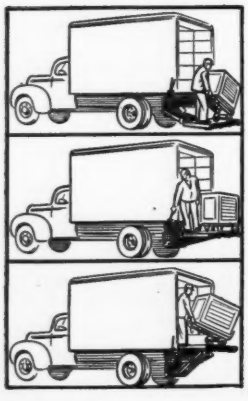


Give Your Customers The NEW

"Floor-to-Floor"

DELIVERY SERVICE

From Shipper's floor to Consignee's floor in less than half the time.



● Your trucks or trailers can now be loaded and unloaded much quicker by Anthony "Lift Gates," the very latest in modern cargo handling equipment. This means faster pickup, faster delivery—no unnecessary delays.

● Your drivers can handle heavy shipments much easier. Merchandise is handled gently and safely—minimize damage claims.

● No tying up area ways. Loading doors open a shorter time. Reduces confusion at the dock.

● Shippers and receivers alike, like this extra service because it costs them less to use your service.

Free *New miniature "Lift Gate" demonstrator sent to you upon request. Clearly shows you how easy it is to load and unload trucks in less than half the time.*

ANTHONY CO., Dept. L-84, Streator, Ill.

assortment of equipment on which some of the controls work in direct opposites? A "one-truck" operator is impractical, because of lack of flexibility.

True, in principle all types of equipment have some points in common, but the motors, bearings, contacts, relays and service points are all different. Time required to properly train a crew for each type represents considerable investment and hazard to the equipment.

Repairs involve spare parts. A manufacturer's recommended list for stock of normal operating replacement parts would have to be duplicated for each different type of unit in use. This, along with the paper work is costly. Interchange is desirable. Crippled units waiting for parts are common.

Most organizations lay out their warehouses in aisles or lanes, with identified storage locations. "Standardizing" on equipment provides the most practical aisle widths. Turning radius will be uniform, also ceiling heights, doorways and head clearances.

Some of those consulted were against standardization. Limitations might arise, they said, thus denying the exploitation or the adoption of new developments. Each manufacturer seeks to make his units distinctive, embracing new features and accessories that will suit individual handling problems. Another factor is the user's wish to know whether or not his first purchased choice was the best. Some answer this question by keeping service records for each unit for comparison.

Similar observations apply to all materials handling equipment: scales, bins, lorries, hoppers, conveyors, pallets, skids, vibrators, hand trucks and others. Careful consideration of the benefits of "standardization" in the purchase of such equipment would certainly be in order.

Coordinating Traffic With Handling

By W. BERT WATSON
Traffic Manager
H. J. Heinz of Canada, Ltd.

Material handling is another way of saying "traffic". The traffic department should be consulted before a handling study is considered complete. Handling by pallet, bin, rack and skid should be extended from production and warehouse to carriers and final destination. This will reduce handling and loading costs from 25 to 90 per cent, and

Why ENGINEERED DESIGN PALLETS?

There is no "cure-all" pallet. Each job has *special requirements.*

ENGINEERED DESIGN pallets are tailored to your specific needs . . . to make your shipping operation as simple, efficient and inexpensive as possible.

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Yet priced at Production Line *Costs*

For the first time . . . the finest steel belt conveyor offered anywhere. Just imagine—all you have is one head (power drive end) and a takeup end. Add as many intermediate sections as desired to form one completely integral unit—a steel belt conveyor up to 175 ft. long

Belt can be fabricated of most metals—or coated to your requirements.

Lasts up to 3 times as long as conventional conveyors—actually provides as much as 300% to 500% more wear with less maintenance. Only an occasional greasing of bearings is required. Resists heat. Users say, "It pays for itself."

Buy it—try it—see the difference.
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STEEL BELT CONVEYOR
Outwears Regular Belt Conveyors 3 to 1

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SERVA-LINE—MAKES PROFITS
Let us explain the advantages
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TIPP *power*

FREIGHT-LADDER

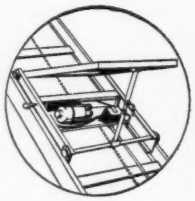
—a unique, portable ladder for stockrooms, warehouses, car and truck loading.

10 foot ladder weighs 80 lbs. . . . carries up to 200 lbs., at 33 feet per minute.

$110.00 for the 10 foot hand - operated FREIGHT - LADDER.

$295.00 for the 10 foot motor - driven FREIGHT - LADDER.

Prices are F.O.B. Tipp City, Ohio



Tipp Freight-Ladders are sturdily constructed of light weight materials* for easy handling and are furnished with rubber tread ladder-shoes for safety. The table, adjustable from 45° to 90° folds into the frame for storage. Free standing supports can be provided. Portable sizes are made up to 24 feet; permanent installations available in capacities up to 1000 lbs.

Tipp Freight-Ladders are manufactured by the makers of Tipp Cable-Way Conveyors.

* Aluminum channel is used in the motor-driven Freight-Ladder; steel tubing in the hand-operated Freight-Ladder.

Triangle Equipment Company, Inc.

45 River Road, Nutley, New Jersey
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Load-Handling Specialists since 1904

HAVE A MATERIAL HANDLING PROBLEM

WE HAVE THE ANSWER

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PORTABLE SERVICE EQUIPMENT CO. can solve all your unproductive moves by supplying the right material handling equipment for the right job.

PORTABLE SERVICE EQUIPMENT CO. has a complete line of nationally known gas and electric industrial trucks, all rebuilt, carrying a warranty of ninety days.

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reduce damage and accidents.

A study reveals these requirements for load carriers: structural design should provide minimum size and strength for load. The platform, pallet, skid, bin, box or rack should fit in vehicle, avoiding space loss and holding bracing and blocking to lowest point. Units must offer product protection, stack easily, be readily handled with available equipment.

Shipment of our products in load units involved study in fastening cartons to pallets. We developed different stacking patterns for better base sizes as related to column heights; glue spotting of containers was introduced for safe shipping and avoidance of tearing at destination; steel strapped pallet loads were used for overseas shipments.

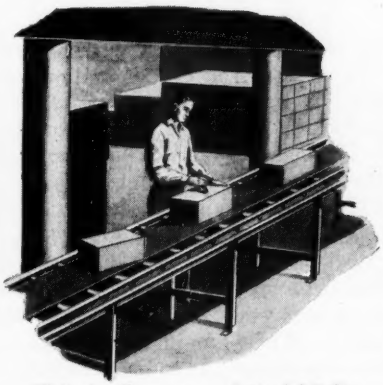
It is the duty of the traffic manager to interest himself in material handling problems. His responsibility starts with the purchase of raw materials, extends through receiving and processing, and ends with final acceptance of order by customer.

★ ★ ★

More abstracts of Second Material Handling Exposition Technical papers will appear in the April issue.

Lower Belt Costs
THROUGH OUR DIRECT-TO-USER POLICY

Since 1909 Imperial's Highest Quality Belting Has Saved Users Thousands of Dollars



Write for literature on Imperial Belts for conveying, elevating, transmission.

All shipments of Imperial Belting are made from our Chicago factory direct to your plant. This enables you to draw on one of the largest belting stocks in the entire country.

All Imperial men are direct factory representatives. You get the personal attention and recommendations of factory-trained sales engineers whose entire interest is on belting. Call on us for service and you will get it.

May we send you additional information and prices? There's a special type of Imperial Belting to do each job better. Prompt shipment on conveyor and elevator belting to fit your needs.

FINEST WOVEN DUCK — INNER-LOCKED CONSTRUCTION SPECIAL IMPREGNATION

Imperial INNER-LOCKED BELTING

Engineered Belting...

The right belt for each job.

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FREE-ROLLING LONG LIFE, LOW MAINTENANCE

Fig. 760
1-Bar Handle

Fig. 753
4-Wooden Stakes

Fig. 762
2-Pipe Stakes

WITH

HALLOWELL

TRUCKS of STEEL

Fig. 772
1 Rack

Fig. 751
4-Pipe Stakes

Fig. 757
2-Bar Handles

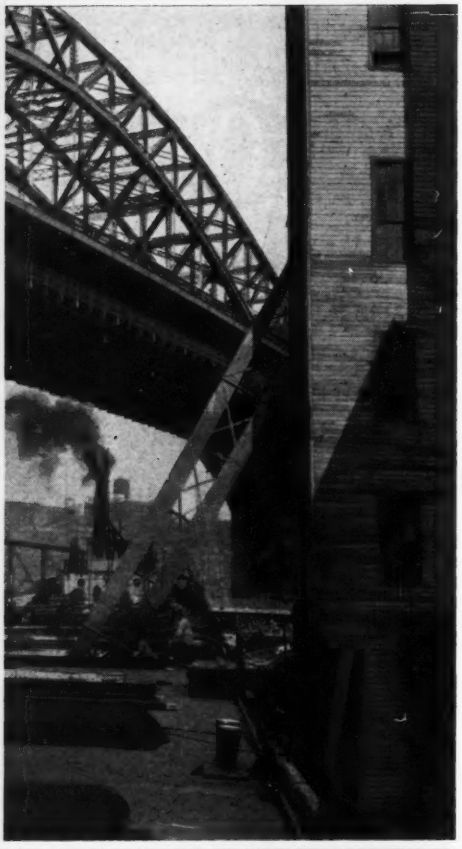
They're built to stand up for years against gruelling punishment . . . and their sturdy, welded steel construction insures against weak, loose joints and wobbly trucks. Free-rolling wheels and casters run easily, even under heavy loads. There are many types and styles —a few of which are shown—*each* a model of smooth-running durability—available for almost *every* service. Ask now for your copy of the "Hallowell" Catalog—it describes them all.

OVER 45 YEARS IN BUSINESS

STANDARD PRESSED STEEL CO.

BOX 799, JENKINTOWN, PA.

Branches: Boston, Chicago, Indianapolis, St. Louis, San Francisco



WIRE ROPE. Looped through blocks of six sheaves, steel cable hold portable leg.

LOADING LEG. Enclosed suspended bucket elevator digs into cargo of lake barge.

GOING UP. Traveling buckets on belt scoop up grain in hold and deliver it to top of six-story tower.

Loading Leg

DELIVERS FROM BARGE TO BIN

CABLE SUSPENDED BUCKET CONVEYOR

200,000 bushels of wheat are unloaded from lake barges in less than two days by a bucket elevator controlled by a single operator.

A CABLE-SUSPENDED bucket elevator, known as a loading leg, unloads wheat in an efficient and economical manner at the Cleveland Division of Montana Flour Mills Co.

This piece of standard handling equipment, common to seaports but rarely seen in inland areas, is the key device in the material handling system which unloads 200,000 bushels of wheat from a lake barge, weighs and carries the grain to storage silos within 48 hours.

By means of the 80-foot bucket elevator suspended in a six-story tower, as shown in the illustrations on this page, unloading of grain begins almost at the moment the barge ties up at the mill's wharf on the Cuyahoga River. A single operator is in charge of the unloading. He is stationed in a control room in the tower from where he can see the entire operation.

The loading leg is suspended like a pendulum by an axle through its head. Ends of the axle are mounted in a frame installed between two guide rails and suspended by 1/2-inch wire rope looped through two blocks of six sheaves. When not in use, the leg is permitted to rest on the floor of the tower to minimize the load on the cable.

When ready to unload, the operator raises the elevator above deck height with a powered winch. The lower end of the leg is then swung out of the tower and over the barge by means of a second winch and a snatch block.

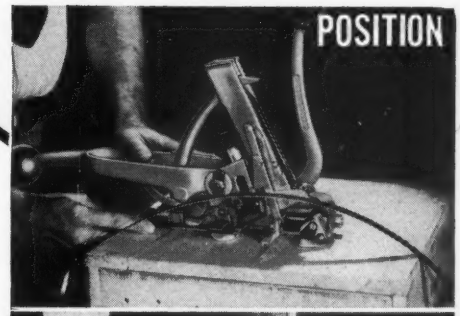
In this extended position, the leg is lowered through an open hatch until the bottom end is buried in the cargo. By pressing a third push button switch, the operator starts the bucket elevator. The buckets, 12 inches long and a six-inch radius, are spaced at eight inch intervals along the belt. A 25-hp. motor drives the belt at a speed which unloads 5000 bushels per hour. As the cargo recedes in the hold, the leg is lowered.

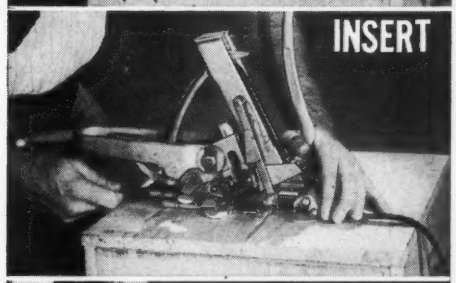
Weighing and storage keeps pace with the unload-

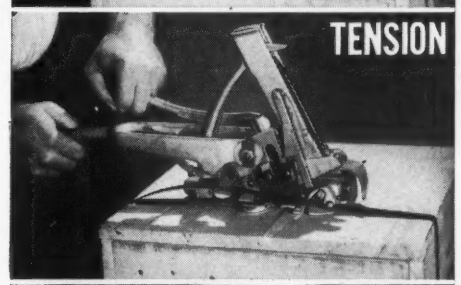
4 STEPS 5 SECONDS

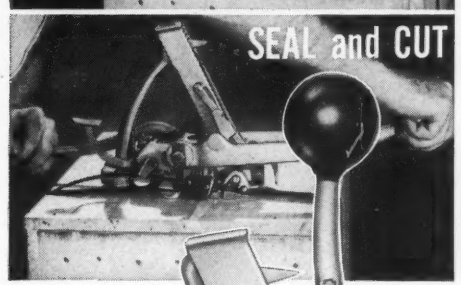
with the Improved

STANLEY ACE STRAPPING TOOL



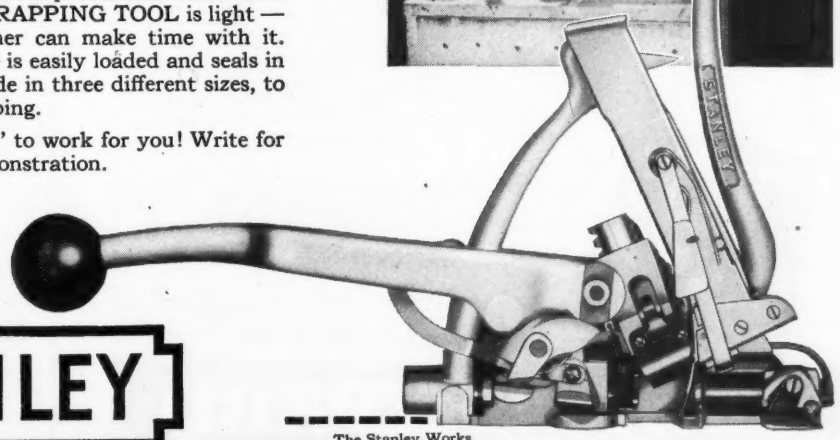






Here's how to put strapping on a production basis. This improved STANLEY ACE STRAPPING TOOL is light — fast — simple — even a beginner can make time with it. Magazine holds 75–100 seals — is easily loaded and seals in any position. The "Ace" is made in three different sizes, to handle ⅜", ½" and ⅝" strapping.

Decide now to put the "Ace" to work for you! Write for full information or ask for demonstration.



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ing. From a receiving hopper where the buckets dump the grain, the wheat is carried by 30-inch rubber belts to two 100-bushel scales. After weighing it is dropped to another belt which carries it through a ventilated tunnel to the storage silos, 100 feet away.

A second bucket elevator, permanently installed, raises the grain to the top of 110-foot cylindrical bins where it is transferred to distribution belts which carry it to the desired bin.

Many advantages have benefited the mill by this unloading system. These include: 1. The grain is unloaded with a minimum of attention required by personnel. 2. Unloading can be conducted in almost any weather conditions because of the enclosed bucket conveyor. 3. Virtual absence of exposed handling operations has increased sanitation. 4. Continuous flow from hold, through scale house, to storage bins without bottlenecks assures uninterrupted unloading and saves time.

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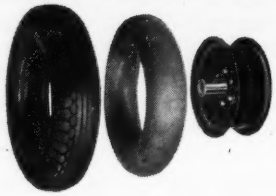

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- 2 4000-Lb. Fork (Electric)
- 7 6000-Lb. Fork (Electric)
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- 6 6000-Lb. Platform
- 1 6000-Lb. Fork

CRANES
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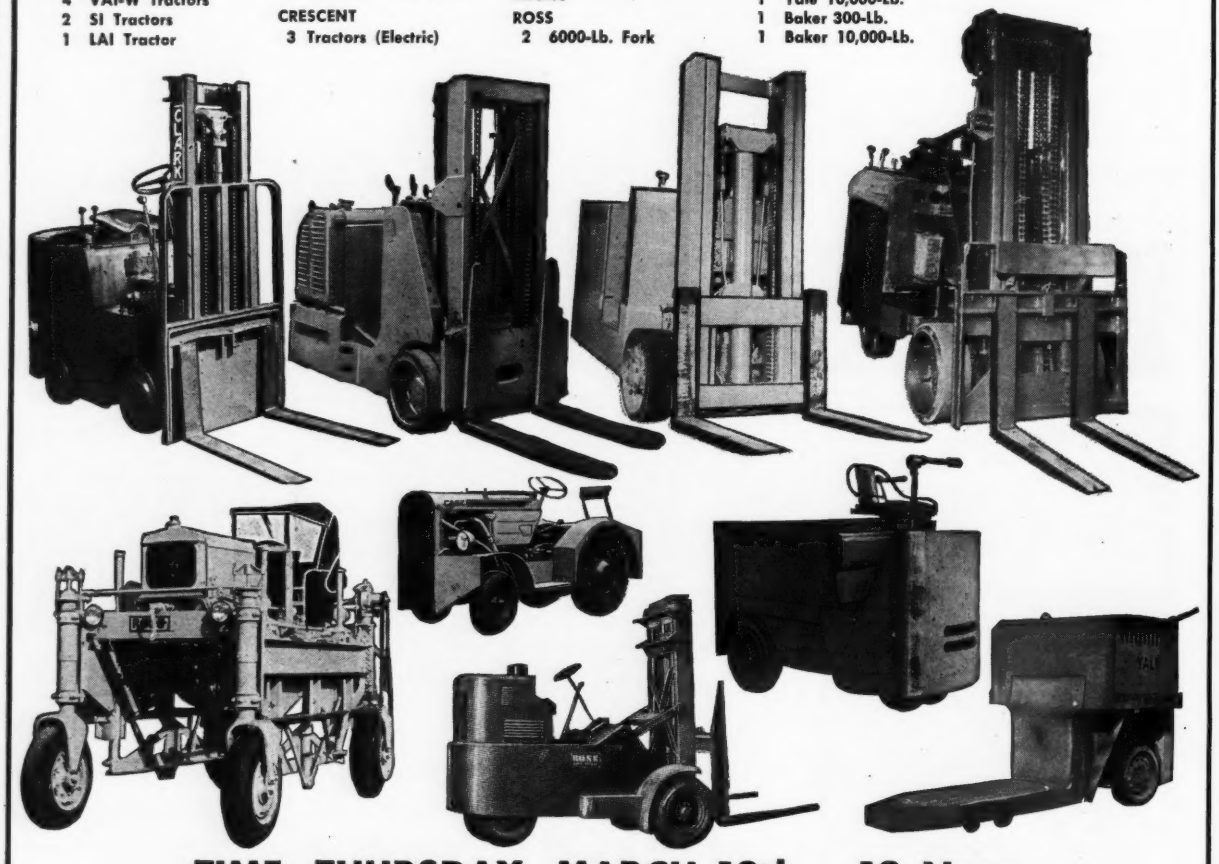

TIME: THURSDAY, MARCH 18th — 12 Noon

PLACE: OUR WAREHOUSE, FOOT OF WEST 45th STREET, CLEVELAND, OHIO

TERMS—Cash, Authorized Purchase Orders or Financed ⅓ Down—Interest $50 per $1000 per year.

This is **NOT** a distress sale—we are **NOT** moving or going out of business. This sale is to make room for construction machinery coming in. We are continuing in the lift truck business. This merchandise carries our new truck guarantee and has been reconditioned with our usual quality workmanship.

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CRANES, BULLDOZERS, BULLCLAMS, SCOOPS, TOURNAPULLS, AUTO PATROL, COMPRESSORS AND ALL TYPES OF LIFT TRUCKS FOR RENT, WITH OR WITHOUT OPERATORS.

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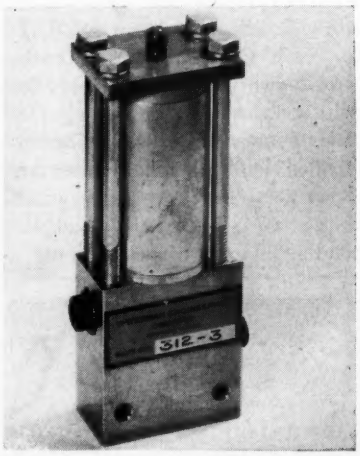
Foot of W. 45th St.—Former American Shipbuilding Yard—First turn toward lake west of High Level Bridge off Bulkley Blvd. 5 minutes from Square.
OWNED, OPERATED AND MANNED BY VETERANS OF WORLD WAR II

For additional information on these products, write Dept. 5, Flow Magazine, 1240 Ontario St., Cleveland 13.

SOLENOID VALVE

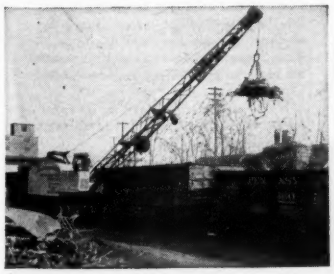
NP204—Waterman Engineering Co. anounces a new Solenoid Valve, which is said to be a compactly-built unit for all hydraulic systems or for handling and non-corrosive fluids. The manufacturer reports



it has a maximum working pressure of 3000 psi. and electrical requirements of six, 12, 24, or 36 volts of direct current. It is claimed that the valve locks the fluid in one direction and admits free flowing in the other direction and is available with integral flow rate regulation.

MAGNET CRANE

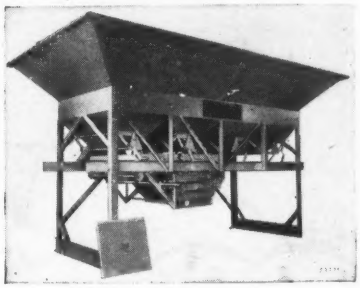
NP205—A new, one-man, single-



engined, self-propelled magnet crane for handling iron and steel scrap and ferrous foundry products is announced by Wayne Crane Division, American Steel Dredge Co., Inc. The new crane has hydraulic steering, an eight-foot wheel base and a 22-foot turning radius. It accommodates 29-inch or 36-inch electromagnets powered by three-kilowatt or five-kilowatt generators. The machine is equipped with a Rud-O-Matic magnet tagline reel and has over-sized drums and clutches. The crane moves, lifts, booms and swings simultaneously or independently. It can be converted to a utility crane, clamshell or dragline by using attachments on the 30-foot boom. With a 15-foot boom, the machine can be used as a shovel or trench hoe. In all six applications crane operates with equal stability over 360°.

MATERIAL BATCHER

NP206—A new Lo-Bin Batcher is announced by the C. S. Johnson



Co. Charged from stockpiles or directly from an embankment, the new unit has a heaped storage capacity of 30 tons with extension panels and measures 9½ feet high. With top panels removed, the overall height is 7½ feet and level struck capacity, 8 tons. Batcher

CONCO
TORPEDO
ELECTRIC HOISTS

- 250-, 500- and 1000-lb. Capacities.
- Hook, Bolt or Trolley Suspension.
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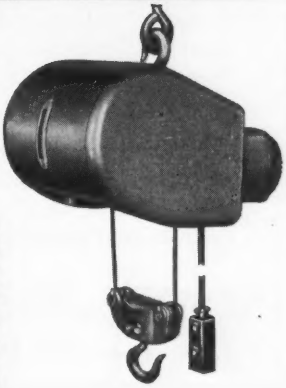
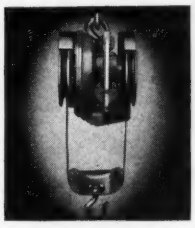


TODAY'S TOP VALUE IN HOISTS



Sturdy cast iron double drums balance load, eliminate overlapping cable. Simple, rugged construction employs only two gear reductions — one worm gear and one spur gear. Worm is of high quality steel forging, hardened and ground, operates on Timken radial thrust bearings. Best grade chilled phosphor bronze used for worm gear. Spur gears machined from forged steel blanks with full depth teeth. All gear shafts operate on ball bearings, fully enclosed, in a bath of oil.

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hopper and scale beam box are suspended from the frame work riding on four hardened steel wheels. Adjustable legs lower bin and batcher 9 inches or raise it 8 inches. With legs removed, the lower bin section, measuring 6 feet wide, 3 feet 9 inches high and 14 feet long, can be slid onto a dump or flat bed truck. Batcher hopper capacity is 22 cubic feet. Two weigh beams in trolley batcher scale have a 1600 pound capacity. Major poise weight of weigh beams drops in notches at 100 pound intervals. Minor poise can be set to 2 pound intervals.

GLASS FABRIC BELT

NP207—Development of a hot material conveyor belt using glass fabric is announced by the B. F. Goodrich Co. The belt is available in two weights, a four-ply for light service and a five-ply for wider, longer belts. Covers recommended by the manufacturer are either a $\frac{5}{32}$ inch top and $\frac{1}{32}$ inch back or a $\frac{3}{16}$ top and $\frac{1}{32}$ back, depending on operating conditions.

BUT THESE HAND TRUCKS *Stay on the Job!*

- Rugged American Pressed-Steel construction takes the beating and comes back for more.
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- Move more with less worker fatigue thanks to American perfect balance.
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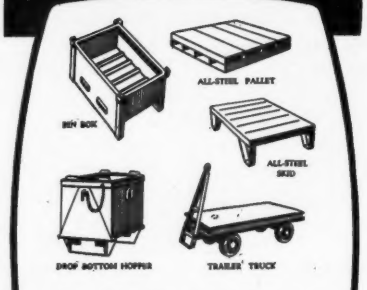

Designed and built to your specific needs, Fab-Weld **all-steel** equipment means top economy, strength and durability. Trucks, dump hoppers, skids, racks and bin boxes are examples of Fab-Weld geared-to-the-job engineering.

Write our Materials Handling Division for full details. Representatives in all principal cities.

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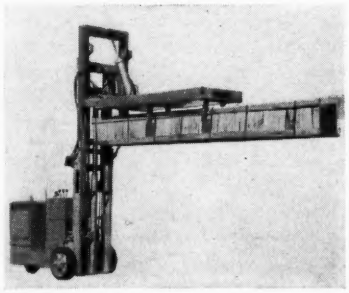
STRONG ARM

NP208—Mercury Mfg. Co. has developed a "mechanical strong arm" device for mounting on a Mercury center control fork truck chassis.



This equipment is designed to handle packs of veneer, 17 feet long and weighing up to 1000 pounds. The truck picks up these packs by means of twin clamping arms. The pack can be elevated in a horizontal position and up-ended into a vertical position. Both actions are hydraulically driven through pressure supplied from the truck pump-motor unit.

SAGE

GRAVITY WHEEL CONVEYORS

Light, strong, welded construction. 12", 14", 18" widths with wheel arrangements of 6, 8, 10, 12, etc., wheels per foot. Available in 5' and 10' lengths, 45 and 90 degree curves. Adjustable stands in three sizes. Accomodate all standard sizes of boxes and cartons.

Special conveyor made to order.

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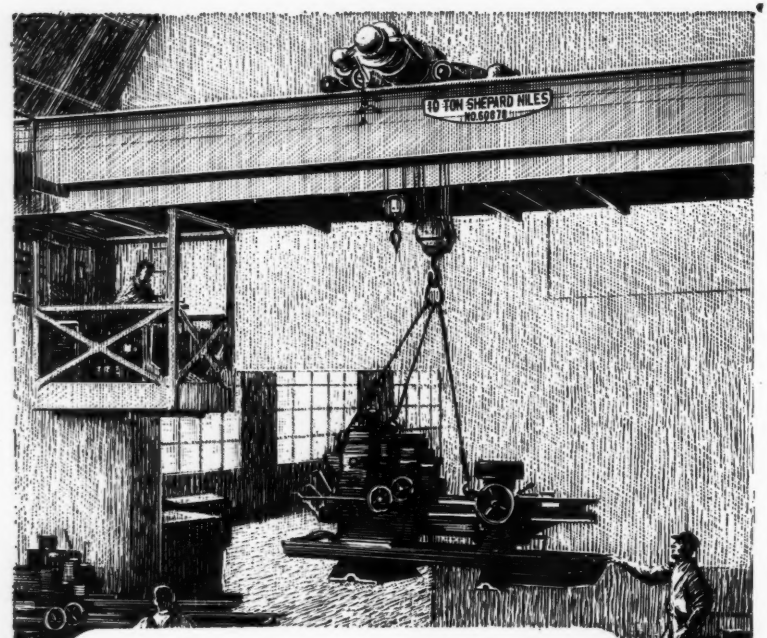

Pick up, Move, Put down, Repeat

When an electric overhead traveling crane will pick up, move, put down heavy loads over and over again — and do it all economically, smoothly, safely — year after year, that's sweet music in the ears of plant engineers and cost accountants.

Ordering an overhead traveling crane that will handle your lifting and moving work involves more than just specifying top capacity. With a Shepard Niles overhead traveling crane you get the capacity you need, sound design, rugged and precise construction and reserve strength — as well as assurance of trouble-free operation. But you get much more. You get an overhead traveling crane designed and built to handle your own particular job.

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★ We are unbiased in our recommendations. If a survey of your material handling shows you need an electric hoist instead of an overhead traveling crane, Shepard Niles will recommend a hoist. America's pioneer builder makes both electric overhead traveling cranes and electric hoists for every need.

Shepard Niles
CRANE & HOIST CORPORATION

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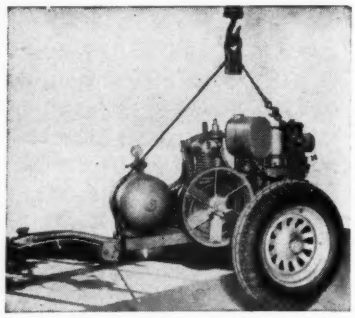
EQUALIZING SLINGS

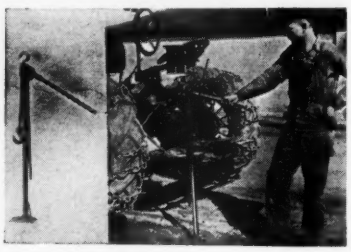
NP209—Now being offered by the Caldwell Co. is an improved model of its Adjust-A-Leg Sling. Available in capacities ranging from ¾-



ton to 12-tons, with a safety factor of five, these units are designed to lift odd-shaped and unbalanced loads level or at almost any predetermined angle. The sling consists of an equalizing unit equipped with wire rope.

HOIST JACK

NP210—A portable tool, the Hoist-Jack, is announced by Coffing Hoist Co. It can be used with or without its stand for lifting or pulling work, according to the

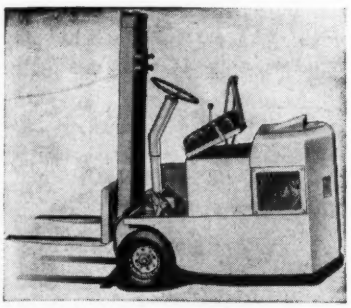


manufacturer, as well as load binding. It consists of three pieces, the stand including a base and pipe; a hoist of ratchet and pawl construction, and a "safety-load" handle that bends before any part of the hoist will give or break. It is built to lift or pull 2000 pounds.

2000 POUND FORK TRUCK

NP211—The Buda Co. announces a 2000-pound fork truck, nicknamed "Thrifty Lift". It is powered by a twin cylinder Onan four-cycle, air cooled gasoline engine developing a maximum of 10 horse-

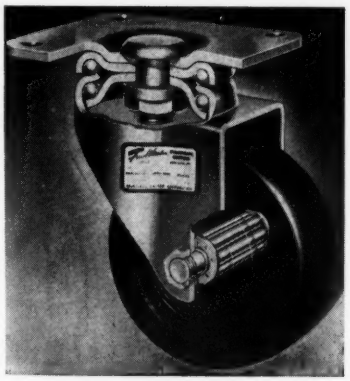
power. Piston displacement is 38.8 cubic inches. Lift and tilt mechanism is completely hydraulic. The unit is available with lifts of 7′, 8′ or 9′ heights. Rubber cushion tires, 16″ x 4″, are standard equipment. They combine the advantages of



pneumatic and solid rubber tires. It can change from forward to reverse without the operator touching the gear shift lever. Overall truck dimensions are: length (less forks) 63⅜″, width 32″, wheelbase 33″. Outside turning radius is 59″. Unit turns in 58″ intersecting aisles.

SWIVEL CASTER

NP212—Faultless Caster Corp. is announcing a new all-purpose industrial caster, Series No. 1100. It features a securely anchored king



bolt with no possibility of turning in the top plate. The king pin holds the plate and two retainers tightly together and permits the horn to swivel freely between two rows of hardened, ground and lapped ball bearings. Raceways are heavy gauge, hardened steel. A stop nut on the king pin has been installed to prevent wobbling. To suit all floor conditions and

The LOAD DISPATCHER

A REMARKABLE TRUCK AT A REMARKABLE PRICE

The Load Dispatcher is adaptable to hundreds of material handling jobs around factories, foundries, warehouses, wharves, freight houses, etc., and will save time and money because of its unusually rapid and convenient handling. Its maneuverability and the ease of it amazes everyone who sees it for the first time. Nothing excels the Load Dispatcher for getting around where the going is tight. Its utter simplicity of design assures that it will require the very minimum of "time out" for attention and maintenance. From first cost on through its daily operation—fuel, labor, speed, maintenance—you will find that it contributes in full measure to economy of operation.

Load Dispatcher, one of a fleet of five saving its owners $100.00 per day, operating in a fertilizer factory with unusually cramped quarters for loading and transporting. Net load shown—2400 pounds.

You will be interested in the many unique, practical features of the Load Dispatcher. Write for catalog. ***Some valuable territories open for distributors who can qualify.***

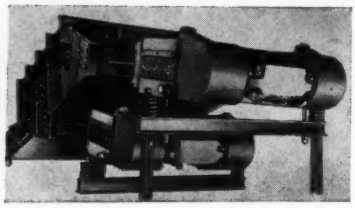
PRICED FROM
$465
F.O.B. INDIANAPOLIS

SCHWITZER-CUMMINS COMPANY
Material Handling Truck Division
1145 EAST 22ND STREET • INDIANAPOLIS 7, U. S. A.

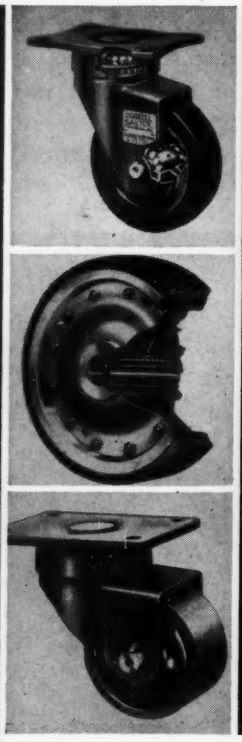
loads up to 500 pounds per caster, the series is available in semi-steel, Ruberex, Rockite, Plaskite and rubber-tired wheels.

GRIZZLY FEEDER

NP213—The F-55 double magnet, heavy duty electric vibratory grizzly feeder is the latest addition to the Syntron line of Vibratory Grizzly Feeders. These grizzlies are available in different sizes and styles, either single or double magnet, with the magnets mounted above the deck or below, variable



control of the rate of feed and with either full or partial grizzly decks.



Time Tested
DARNELL
CASTERS & WHEELS

Darnell Dependability assures savings, service, safety, speed. A caster or wheel for every use.

You are sure to find the exact caster or wheel for your individual requirements in the Darnell line.

WRITE FOR THE LATEST DARNELL CASTER & WHEEL MANUAL

GET YOUR FREE COPY

DARNELL CORP. LTD.
LONG BEACH 4, CALIFORNIA
60 WALKER ST., NEW YORK 13, N.Y.
36 N. CLINTON CHICAGO 6, ILL.

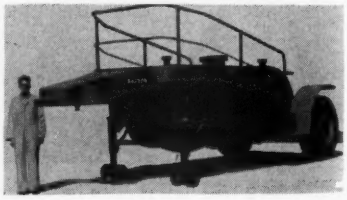
PORTABLE CONVEYOR

NP214—Two portable conveyors, 14 and 20 feet long, are now available from Sermat Conveyor Corp. Powered by gas engine or electric motor, they have rubber ply canvas belts and are designed for handling bulk materials such as coal, sand, gravel, chemicals, castings, machined parts and other

materials. The equipment has a hydraulic lift for raising the conveyor from level to 37 degrees. Pneumatic tires, 4.00 x 8, and automobile type springs are furnished but 6.00 x 16 tires can be obtained on special order. Other features include a large hopper, one inch cleats cushioned in rubber, and a trailer-type hitch.

TANK TRAILER

NP215—An off-highway trailer to provide portability for tanks containing liquid materials in intra-plant service has been introduced



by Easton Car & Construction Co. Trailers of the same general design can be built to provide portability for tanks of any desired capacity. The tank rests in three cradles and is held in place by steel straps. The straps can be disconnected in order to remove or replace the tank. The trailer is of all-welded construction and has a

standard king pin connection. Pneumatic tires are used. A safety tread walkway and handrail provides easy access to tank outlets. The hand-operated vertical screw type landing gear has a capacity of 18,000 pounds.

BARREL SKID

NP216—The Wellman Bronze & Aluminum Co. is producing a magnesium skid. Weighing only 33 lbs. with a capacity load of 800 pounds, the new nine-foot skid is designed for rapid handling of all types of barrels. Cast hooks and shoes are replaceable.

SHOP UTENSILS

NP217—A new line of shop utensils for handling acids, alkalis, and other corrosive solutions is announced by Automotive Rubber Company, Inc. Manufactured from reinforced perforated metal, the utensils are completely covered with a ⅛" seamless rubber coating that protects them from action of chemicals and protects solutions from contamination.

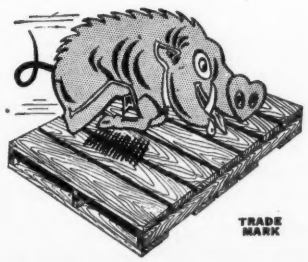
There are None Better than "Razorback" Pallets!

▼

OUR NEW NO. 5 LIGHTWEIGHT PALLET WAS THE BIG HIT OF THE CLEVELAND SHOW!

This new "Razorback" Corner-Lock 4-Way Pallet is made of dry cottonwood . . . the lightest, toughest, of woods. 40x48" size for use in freight cars and trucks.

▼



● WHEN you buy pallets, carefully consider maintenance cost as well as first cost. That's what the country's largest firms do . . . and that's why more of them turn to "Razorback" Pallets all the time!

● THESE are strictly QUALITY pallets, through and through . . . yet they are priced right because of volume production. Get our new descriptive folder for full details.

ARKANSAS PALLET CORP.

Plant in Pine Bluff, Arkansas
Sales Office: Box 153-A
Pul. Hgts. Sta., Little Rock, Ark.
Phone 3-9133

INDUSTRIAL TRUCKING FLOORS
Resurfaced to withstand any traffic . . .

with CAMP'S No. 7 INDUSTRIAL FLOOR RESURFACER

Tougher than Steel—Easy to Apply

COSTS ONLY $15.00 PER 100 SQUARE FEET

Camp's No. 7 is applied like cement over your present wood or concrete floors. A ¼ inch thickness resurfaces worn or rough concrete floors to withstand any traffic. Sets in three or four hours—ready for heavy trucking in 24 to 48 hours. Camp's No. 7 comes ready to mix—nothing else needed. Your choice of brown, red and natural dark gray.

Order a trial unit—you must agree it is the best resurfacer you have seen, or there will be no charge.

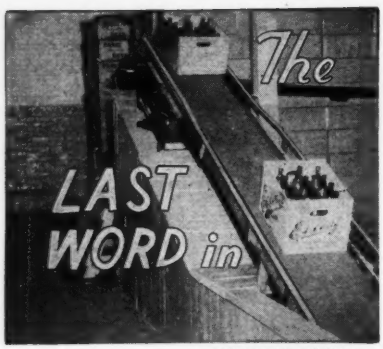
EVERY INSTALLATION UNCONDITIONALLY GUARANTEED
Further information describing this and other Camp's flooring material sent on request.

Typical of Camp jobs is the recent application of almost 300,000 square feet of NO. 7 in a Marshall Field & Co. warehouse in Chicago. Users of Camp Flooring Materials include Illinois Bell Telephone, U. S. Rubber, Sears, Roebuck & Co., Carnegie-Illinois Steel, General Motors, American Can, etc.

Although NO. 7 is perfect for 90 per cent of all industrial needs, over 15 other Camp Flooring Materials enable us to meet even highly specialized specifications. Whatever your problem, we are ready to advise and assist. Write today. No obligation.

The CAMP COMPANY
6958 S. State St., Chicago 21, Ill., Triangle 4770

from COAST TO COAST



Scientific Material Handling by

ISLAND

Spot Conveying,—the quickest, most economical and safest method of conveying, inspecting, assembling any type of material to the exact spot where needed.

A system and a definite piece of equipment for each job or object to be handled.

No obligation to discuss your problems with our Field Engineers.

For the Dairy, Foundry, Small Parts Manufacturer, Brewery, Restaurant, Warehouse, Canning, Packing and Food Industries, or wherever any item has to be moved.

Write for interesting Bulletin V-V-1A-1.

ISLAND EQUIPMENT CORP.
101 Park Ave., New York 17, N. Y.

OPPORTUNITIES

Men wanted *Jobs wanted* *Lines available*

Rates: for "Positions Wanted" $3.50 minimum, limit 25 words. For all other classifications 3.50 minimum for 25 words, each additional word 10c; boldface type or all capitals, $6.00 minimum for 25 words, each additional word 15c; limit 50 words. Box addresses count as five words. All insertions are payable in advance.

PALLETS FOR SALE

288 Hardwood Pallets (one carload) 40 x 44, made with 8" wheel spaces, without chamfer thoroughly dry. Customer's warehouse burned down, necessitating sale elsewhere. Exceptionally low price to make room. Hopkinsville Wood Craftsmen, Inc. Hopkinsville, Kentucky.

SALES MGR. WANTED

HAND TRUCK SALES MANAGER

We are looking for an executive, preferably one familiar with material handling engineering, to take over management of our Industrial Hand Truck Division. His duties would include suggesting improvements to our distribution and service setup and new models or improvements to our present models. If you believe you qualify, send a resume of past training and experience with a recent photograph to: FLOW, BOX 3148.

REPRESENTATIVES WANTED

Representative Wanted

Manufacturer of nationally advertised line of equipment and supplies wants manufacturer's representative for a number of exclusive areas. Fast moving, good repeat business. Representative must contact shipping departments. A good opportunity for the right man to secure a permanent and exclusive line. Write, stating number and type of lines now sold.

F. X. Spalding
7358 N. Seeley Ave.
Chicago 45, Illinois

WANTED—Sales Representation. We manufacture high quality OAK pallets, skids, etc. from timber stand to finished product—to customer's specifications. Write:

BATH WOOD PRODUCTS CO.
OWINGSVILLE, KENTUCKY

USED EQUIPMENT FOR SALE

1946 UTI Minneapolis-Moline industrial tractor, 49 hp, 5 speed, dual tires, and 4000 pound lull hydraulic loader. Under 200 hours operation.

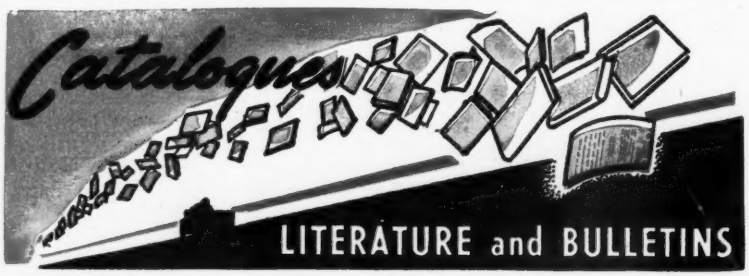
Southern Oregon Sales, Inc.
P. O. Box 1266, Medford, Oregon

1940 CLARKAT HEAVY DUTY TRACTOR, 2000 POUNDS PULL, GOOD CONDITION, $800.00. THE HILL ACME COMPANY, 6400 BREAKWATER AVENUE, CLEVELAND, OHIO.

LANSING HEAVY DUTY WAGON TRUCKS, 79 x 45, all Hyatt Roller Bearing, capacity 4,000 to 6,000 lbs. Immediate delivery. $62.50. Metropolitan Builders Supplies Corp., 44 Court St., Brooklyn, N. Y.

USED EQUIPMENT WANTED

WANTED IMMEDIATELY
FORK LIFT TRUCKS
GAS OR ELECTRIC
HIGH PRICES PAID
A&A MACHINERY
1267 Flushing Ave., Brooklyn, N. Y.
EV 7-9466



The publications featured on these pages were written by experts. They are FREE publications. To obtain these use the postcard bound into this issue.

456—Industrial Tires . . . The General Tire & Rubber Co. offers an eight-page leaflet on pneumatic industrial tires, which includes four pages of complete specifications as well as sketches and photos of many different uses. Wheels, tubes and rims are also discussed.

457—Accordion Conveyors . . . A booklet by Food Machinery Corporation on a new portable, collapsible, extensible roller conveyor. Illustrations of various positions are shown; construction and design features are discussed.

458—Hydraulic Elevotors . . . The Joyce-Gridland Co. announces a 12-page bulletin on its line of hydraulic elevators. Sketches illustrate specifications and photos show various types of industrial applications.

459—Unitizing Gluer . . . Features of unitizing gluer designed for shippers of glass, crockery, tins, paper boxes and other containers are shown in bulletin available from Crowe Engineering Co.

460—Hand Lift Trucks . . . The Moto-Truc Co. has made available for distribution an eight-page bulletin dealing with its line of motorized handlift trucks. It contains details of the various models and photographs of the equipment in use.

461—Fork Truck . . . A six-page bulletin illustrating and describing the new Aisle Saver Palletier, Model LHVH, made by Crescent Truck Co., has been issued. It contains specifications and illustrations of the equipment being used in congested warehouse areas.

462—Metal Conveyor Belt . . . Cyclone Fence Division of American Steel and Wire Co. has issued a 28-page catalog explaining applications of wire conveyor belt. It illustrates features of chain link belt, various weaves, actual size pictures of meshes, openings and gauges, describes chain edges, heavy duty and special purpose belts, and accessories. Methods of measuring clear openings and mesh per inch are given in addition to gauge tables.

463—Skeleton Pallets . . . A single page bulletin describing welded steel pallets which permits drum palletizing or depalletizing by fork lift truck has been published by Pacific Chain & Mfg. Co. It lists the advantages and specifications of the equipment.

464—Excavators . . . Insley Mfg. Corp. is distributing a 16-page illustrated catalog including illustrations of applications and specifications of its shovels, hoes, lorries, trailers, clamshell, crane and dragline. It shows hoist and swing assemblies, roller construction and drives.

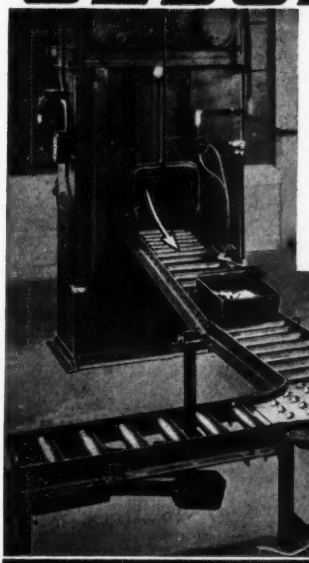
465—Lift Trucks . . . Features of Truax Machine and Tool Co.'s Two-Ton Lift Trucks, operating on full pneumatic tires, are listed in a new four-page bulletin. The gasoline powered hydraulic lift truck is built to load freight cars despite its two-ton capacity.

466—Wirebound Boxes . . . A story of the growth of General Box Products are shown in a new issue of The General Box. This booklet is of interest to all persons concerned with shipping containers. Particular prominence is given to veneer cutting, wirebound box manufacture and assembly.

467—Wire Rope Sling . . . A new bulletin describing the Hercules (Red-Strand) Flat-Laced Wire Rope Sling, made of six parts of wire rope laced together to form a flat, strong and flexible lifting device, is available from A. Leschen & Sons Rope Co.

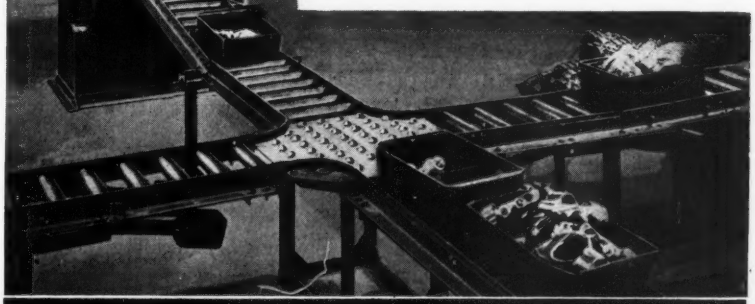
This was a back-breaking, time-consuming job...before the

OLSON CONVEYOR SYSTEM took over!



Now, a Subveyor automatically elevates and discharges the tote boxes to gravity conveyor lines . . . which in turn carry them to various manufacturing departments. An Olson Conveyor System can solve *your* intra-plant handling problems, no matter how complex.

Write for Free Catalog of Models



SAMUEL OLSON MFG. COMPANY, INC.
2426 Bloomingdale Rd. Chicago 47, Ill.

LYON-Raymond
New SINGLE-STROKE LIFT TRUCK
• 2500 lb. CAPACITY •

- Single frame construction, saving weight without sacrificing strength. Gives over twice the underclearance of any double frame lift trucks.
- Operates in confined spaces; handle can be manipulated at any point within 90° right or left of center.
- Elevating mechanism completely enclosed — mechanism protected; injury to workers eliminated.
- Push button action engages lifting device. Positive lock holds load in elevated position.
- Built-in hydraulic release check lowers load gently — safely.
- Safety lock prevents handle from flying back when partially lowered during lifting operation.

LIGHTWEIGHT
STURDY—SAFE

SIMPLE
Easy to Operate

- This notably different Lyon-Raymond lift truck is a worthy addition — on its own particular merits — to a well-established line of Lyon-Raymond hydraulically operated lift and pallet trucks.

LYON-Raymond Corporation
674 Madison St., Greene, N.Y.
Material Handling Equipment—Engineered Hydraulic Devices

It Was a Great

The annual Material Handling Exposition—an established event of national and international interest.

THE second National Material Handling Exposition, held in Cleveland January 12-16, was a success from every angle, an impression that is eloquently conveyed by the photos reproduced on these pages.

Here is a resume of the statistics, which tell only one part of the story. Between 15,000 and 16,000 conventioners dropped in at Cleveland's Public Hall during the five-day show to see the displays set up by over 200 exhibitors in more than 200,000 square feet of floor space. This was twice as many exhibitors as participated at the first National Material Handling Exposition the previous January. The floor space was triple that used for last year's show. This means that material handling has caught on, both as an industry and as an annual exposition.

Beyond the statistics, there were many phases of particular interest. A constant stream of people poured down the main stairway, headed for the equipment displays. For the most part, they were "live" ones. Many booths gave demonstrations that duplicated actual plant operations. Powered overhead conveyor systems had load carriers of various types traveling between work stations; some showed packages or containers moving over circuits that included belt, roller and overhead chain types, the transfer from one to the other being effected mechanically. There were scale models of traveling bridge cranes, and a full range of powered and hand-operated hoists. A complete assortment of fork, ram and platform trucks was demonstrated in many booths. Throughout each day hundreds of visitors viewed this type of equipment, including many special attachments, handling baled, bagged, crated and boxed materials, and many others. Manual trucks in dozens of designs and for as many different commodities were shown. The crowds were equally thick

CONTEST WINNERS. Irving B. Hexter, FLOW's publisher left, presents check for $500 to R. C. Rick and R. W. Belt in magazine's booth.

ASME DEMONSTRATION. Miss Materials Handling receives bouquet as finishing touch in exhibit showing conveyorized assembling.

Show

RADIO BROADCAST. Sam W. Gibb, president of the Material Handling Institute, told of modern handling equipment during an interview over a local station.

around the booths displaying casters and wheels, pallets and skids, made of standard and light-weight materials, and accessories of many kinds. In many booths certain types of operations were demonstrated with scale models. Here, too, the visitors gathered around from shortly after opening till closing time. From all over the U. S. and from a score of foreign countries people came to get ideas. The inquiries and orders recorded at the booths showed that they got them.

The motion picture theatre played to a capacity house practically during the entire week. The 20 films shown represented the equipment of as many manufacturers. Included were monorail installations, applications of hydraulic equipment, technical data on the use of flow sheets, in addition to complete plant material handling systems employing the whole gamut of handling devices.

The technical sessions likewise drew record crowds. A number of papers were given on the latest techniques employed in a variety of industries and operations. In addition, there was an interesting selection of engineering papers on such basic subjects as layout, making a material handling survey, problems in packaging, standardization of equipment, material handling as the traffic man's problem, the place of the plant material handling engineer, and others.

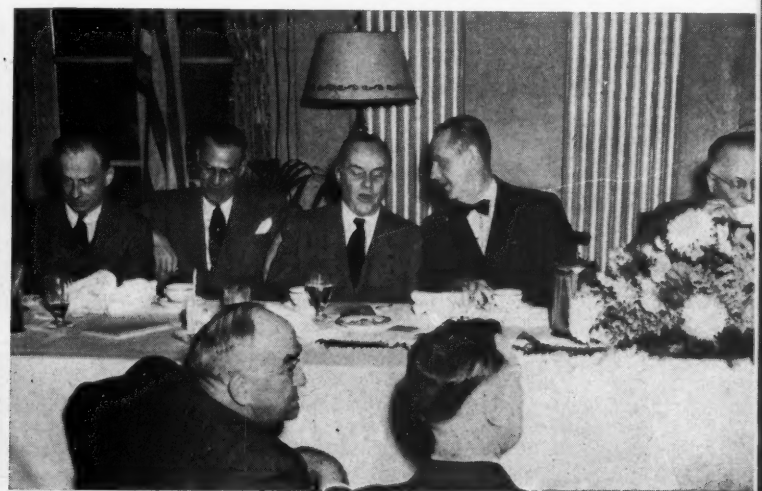
NOTE: Condensed versions of two of these papers appeared in last month's issue, and abstracts of several more are given in this one. Abstracts of the remaining papers will appear in FLOW for next month.

A highlight of the Exposition was the demonstration which was planned and executed by the material handling section of the American Society of Mechanical Engineers, directed by C. H. Barker, Jr. "Material Handling Equipment in Action—from source to consumer", presented in the arena, was attended by more than 5000 persons.

Following are the names of exhibiting and non-exhibiting companies which contributed equipment and materials in order to make this interesting demonstration possible. Their help is hereby

FLOW'S BOOTH, at exposition entrance, drew hundreds of visitors served as "The Key to the Show."

SPEAKER'S TABLE. A section of the main table at the annual banquet which was attended by a sellout crowd is shown.



AID MANPOWER . . . SPEED MATERIALS HANDLING

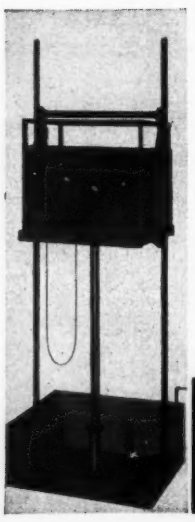
THE NEW "STREAMLINER JR."*

It takes only one man to raise or lower the new "Streamliner Jr." with its exclusive hydraulic lifting arrangement. Of sturdy welded construction—the standard booster operates at 45 feet per minute . . . is equipped with "Diamond Casters" for maximum mobility . . . can be "anchored" in any desired location by simply "flipping" the caster base. Positive tightening prevents the booster bed from slipping back. Write for full details today.

* Trade Mark Reg. U. S. Pat. Off.

HARRY J. FERGUSON COMPANY
WHEEL • PORTABLE BELT • BELT AND ROLLER GRAVITY CONVEYORS
121 WEST AVENUE, JENKINTOWN, PENNA.

Using Power Vehicles for Elevator Loading?



That calls for an elevator with rugged construction and accurate landing stops

Oildraulic Elevators work perfectly with material handling methods in use today. Even with heaviest loads they operate smoothly and stop at floor landings accurately. Every Oildraulic is built to take hard wear . . . ruggedly constructed.

FOR 2, 3 OR 4-STORY SERVICE

Other advantages: Requires no penthouse or heavy load-bearing shaftway structure—powerful hydraulic jack pushes load up from below. Compact electric power unit can be placed in waste space. Gives lowest cost operation on rises up to 40 ft. Car sizes and capacities as required. All popular controls. Write ROTARY LIFT CO., 1151 Kansas, Memphis 2, Tenn., for catalog RE-302.

Rotary
OILDRAULIC ELEVATORS
The Elevator That's PUSHED Up

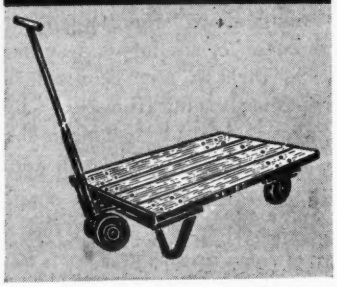
gratefully acknowledged by ASME: **EXHIBITORS,** Acme Steel Company; Automatic Transportation Co.; Barrett-Cravens Co.; Better Packages, Inc.; C & D Batteries, Inc.; Clark Tructractor; Cleveland Wire & Spring Co.; Thos. A. Edison Inc.; The Electric Storage Battery Co.; Elizabeth Iron Works; General Box Company; Gould Storage Battery Corp.; Hyster Co.; Lewis Shepard Products, Inc.; Lyon-Raymond Corp.; Mercury Mfg. Co.; Monroe Auto Equipment Co.; Mototruc Co.; Pittsburgh Steel Products Co.; Powell Pressed Steel Products Co.; Rapids-Standard Co.; Speedways Conveyors, Inc.; Standard Conveyor Co.; Thomas Truck & Caster Co.; Towmotor Corp.; Union Metal Mfg. Co.; Jervis B. Webb Co.; Yale & Towne Mfg. Co.; Baker-Raulang Co., Baker Industrial Truck Div.; Elwell Parker Electric Co.

NON-EXHIBITORS

American Steel & Wire Co.; Erie Railroad; Ferro Machine & Foundry, Inc.; The Ford Motor Co.; The Glidden Co.; Greeley General Warehouse Co.; The Lamson Co.; Mack International Motor Truck Corp.; National Adhesive Co.; Pepsi-Cola Co.; Strong, Carlisle & Hammond Co.; Trailer Co. of America.

The FLOW booth, too, was a good barometer of the intense activity everywhere. A half dozen

SEMI-LIVE SKIDS



RE-BO SEMI-LIVE SKIDS offer a complete system for short-haul transportation or for spotting or assembling orders in stock or shipping rooms. Connected in a jiffy—a marvel for handling in close quarters. Furnished with either semi-steel or rubber-tired wheels.

QUICK DELIVERIES
SEND FOR BULLETIN NO. 6

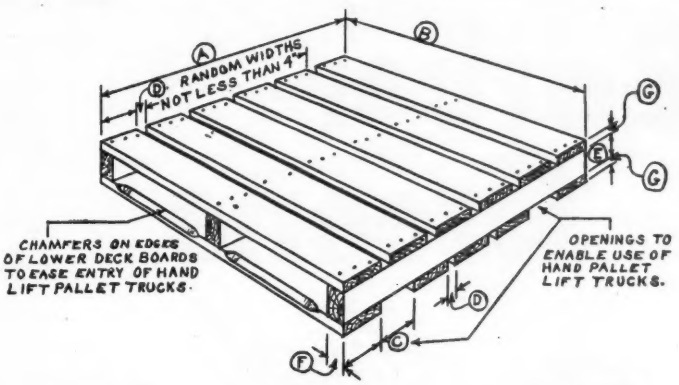
Plant—Bedford, Va.

RE-BO MANUFACTURING CO. Inc
331 Madison Ave. New York 17

attendants were kept busy handing out carry-all envelopes, sample copies of FLOW Magazine, and taking orders for the new FLOW Directory of Material Handling Equipment and Accessories. The Directory was displayed at the show for the first time. A high spot of the activities in the booth was the presentation by FLOW's Publisher Irving B. Hexter of the $500 check to the joint winners of the first prize in the 1947 Material Handling Cost Analysis Contest. A photo of the presentation is included on these pages. *(See details on the new cost analysis contest for 1948 in this issue.—Ed.)*

Next year's Exposition has been scheduled for Philadelphia. This will not only bring the show closer to other highly industrialized centers but also to the leading ports of entry for foreign representatives from all over the world.

The second National Material Handling Exposition has already established this event as an institution of world-wide interest.



A - STRINGER LENGTH
B - DECK BOARD LENGTH
C - WHEEL OPENINGS
D - DECK BOARD SPACING
E - STRINGER HEIGHT
F - STRINGER THICKNESS.
G - DECK BOARD THICKNESS

SEASONED HARDWOOD PALLETS

Ordering our seasoned hardwood pallets gives you an important saving in initial cost. Their light weight means lower freight. Fill in specifications above or send us your drawings for prompt quotaton.

STERLING LUMBER & SUPPLY CO.

11900 S. Halsted St. Chicago 28 PULlman 0221

THE *Dependable* DUMPER

Speeds Production . . . Cuts Handling Costs

Tough handling jobs are easy with the Dependable Dumper. Handles all types of materials. One man can move and unload the gravity dumper in seconds.

Speed production . . . eliminate wasteful handling costs . . . move more loads faster . . . easier . . . safer, more economically with the Dependable Dumper.

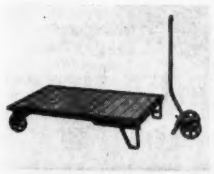
Dependable Dumper

Constructed of high strength steel for greater strength, lighter weight, more pay load.

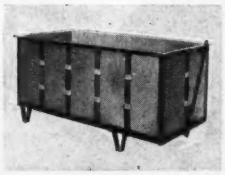
Dumper With Caster Wheels

Three way use: pushed by hand; with hand lift truck; with power lift truck.

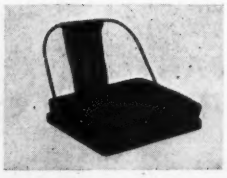
Write for descriptive literature and specifications.



Skid Platform (Semi-live) and Jack. Standard models.



Aluminum Hoppers (built to specifications).



Solid Comfort Seat—standard and special models.

STREATOR Dependable MANUFACTURING CO. STREATOR • ILLINOIS SINCE 1913

Manufacturers of standard and custom-built materials handling equipment engineered to fit your needs.

Barber-Greene

Sensational

NEW CAR UNLOADING TEAM!

unloads car of coal, rock or crushed stone in 45 minutes!

358 B-G HOPPER CAR UNLOADER

Here's a rugged all-material unloader that's completely new in design. The 358 cuts hopper car unloading time as much as 90% — unloads most any bulk product from fine sandy material to large-sized aggregates and coal at capacities up to 3 tons per minute — empties a 60-ton car in as little as 45 minutes without jam-ups or delays. There's *positive material flow at all times.* Easily "spotted" in track pit or above rails — really portable — can be towed at normal traffic speeds.

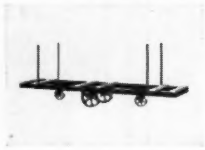
363 B-G PORTABLE CONVEYOR

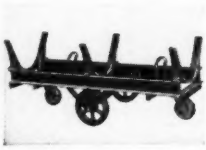
The newly designed B-G Model 363 Portable Conveyor is an extremely flexible machine that will prove to be profitable to yards, industrial plants, contractors, etc. Speeds up stock-piling or transfer of material from car or stock pile to trucks. Entirely new in design, the 363 features V belt drives, pneumatic tires, shock absorbers, towing hitch, and a host of new improvements. Send for new attractive literature on these two great B-G machines.

BARBER-GREENE COMPANY
AURORA, ILLINOIS

Constant Flow Equipment

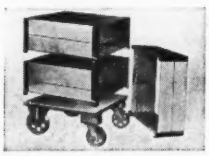
Get TRUCKS to Fit YOUR Needs





THERE are over 3000 types CLARK trucks in addition to the CLARK LIFT JACK SYSTEM of materials handling. We are sure we can fabricate equipment to suit your particular requirements. Call on us and let our engineers work with you.

All Steel Welded Truck Co.
ROCKFORD, ILL.



Detroit

ELECTRIC HOISTS
PNEUMATIC HOISTS
ELECTRIC TRAVELING CRANES

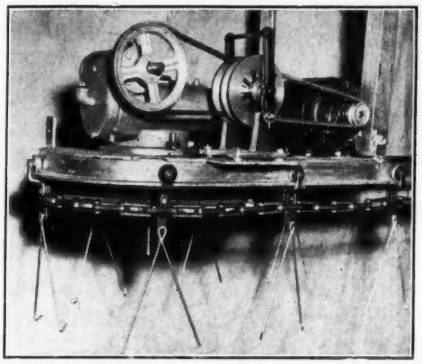
A type for every purpose. Quick operating, efficient material handling units.

Give us an outline of your material handling problem. We will provide recommendations.

Ask for this bound set of bulletins on Detroit Hoists and Cranes

DETROIT HOIST & MACHINE CO.
8216 Morrow St.
Detroit 11, Mich.

KEYSTONE JUNIOR CONVEYORS



100% prefitted. Bolted joints. No track welding, cutting, or fitting required for installation. Easily installed. Low first cost. Overhead or floor supported. Load capacity 75# per trolley. Rivetless Drop Forged chain 2" pitch. Ball-bearing trolleys.

KEYSTONE JUNIOR CONVEYORS are identical to their big brothers—the 348 and 458 conveyors, which are the accepted standard throughout the world. The Keystone Junior picks up where the 348 leaves off. Handling loads of 75# per trolley or live loads of up to 10,000# it is a Little Giant. Caterpillar or Corner Drives available. Vertical turns as small as 2' Radius. Horizontal turns as small as 9" Radius. Rotating hooks available for use in spray booths, ovens, etc. Conveyor speeds from 3-I.P.M. to 80 F.P.M. available.

Write for Bulletin No. 947

BEVERIDGE MILLWRIGHT SERVICE, INC.
7376 Grand River Ave. Detroit 4, Mich.

"IT PRINTS ANYWHERE"

ON BOXES
ON CARTONS
ON SHIPPING TAGS
ON LABELS
ON PACKAGES

DEALERS: Write for Widely Accepted Dealer Plan

FAST, ECONOMICAL—IDEAL FOR MARKING, ADDRESSING, DUPLICATING, SMALL PRINTING JOBS

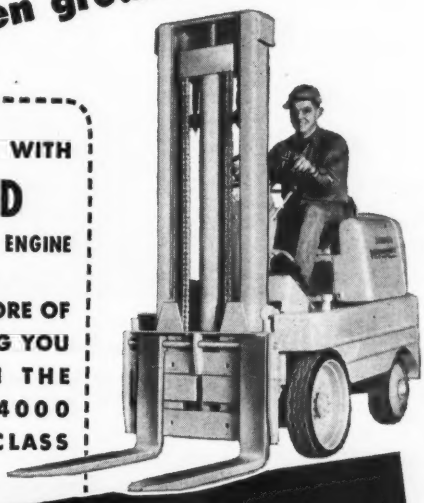
Guarantees you accuracy in those duplicate addresses, code markings, signatures. The No. 1 MULTISTAMP stencil duplicator permits quick changes in wording . . . gives you "a rubberless stamp in one minute for two cents." Prints in places no other duplicator can reach . . . takes up to 5 lines of type 3 inches long. Makes 1000 or more clear copies from one stencil, one inking. Just type or write the stencil, snap it on, and print.
Complete with supplies in compact, durable case. Weight: 2 pounds.
Larger Outfits Also Available

MULTISTAMP
STENCIL DUPLICATOR
MANUFACTURED ONLY BY THE MULTISTAMP CO., INC. NORFOLK, VIRGINIA

No 1 RUBBER STAMP SIZE

$7.50 f. o. b. factory
COMPLETE (non-mechanical) OUTFIT

REDESIGNED COMPLETELY
for even greater economies

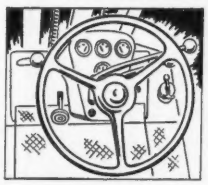


POWERED WITH
FORD
INDUSTRIAL ENGINE

NOW...MORE OF EVERYTHING YOU WANT IN THE 3000 — 4000 POUND CLASS

THE NEW SERVICE MO-TOW-LIFT 1948

CHECK THESE NEW FEATURES



All Controls and Instruments Clustered in Front of Driver

An exclusive Mo-Tow-Lift advantage. Gives precision control . . . a single lever for two forward speeds; a second for two reverse speeds; "finger-tip" control lever that raises, lowers and tilts the mast. Oil, water, ammeter and gasoline gauges grouped below steering wheel.

Instant Maintenance Accessibility

Interlocking sections allow quick removal of seat frame and side panels. Engine and hydraulic valve controls are thus fully exposed. Loosening of just six bolts allows inspection of clutch, master brake cylinder, transmission, steering gear and pedal adjusting points.

• Always a top performer and now *basically* improved, MO-TOW-LIFT 1948 offers you *more* of everything — in performance, dependability, safety, low cost operation. Easier to handle — it drives like a car — with the *shortest turning radius* of any fork lift truck, MO-TOW-LIFT 1948 enables you to mechanize *more* of your materials handling jobs. Its greater payload efficiency cuts costs; its own maintenance expense is lower because 70% of the wearable parts are standard Ford parts. It is the only fork lift truck that offers you *all* these advantages:

★ "Around-the-corner" service with famous Ford Industrial Engine ★ Shortest turning radius for greater usability ★ Maintenance accessibility that cuts operating costs ★ All controls and instruments clustered in front of driver ★ Easier steering with Ross Cam and Lever gear ★ Enclosed upper hoist assembly lessens dirt abrasion in mast ★ Full, finger-tip control of hydraulic lift and tilt ★ Extra safety from heavy-duty armor frame ★ Adjustable posture seat for greater driver comfort.

Before you invest in any fork lift truck get the facts on MO-TOW-LIFT 1948. Write for Bulletin.

SERVICE CASTER & TRUCK CORP.

INDOOR MILES Rock ROLLER and PLATE

Executive Offices: Albion, Michigan
Plants at Albion, Michigan and Somerville 43, Mass.
Representatives in all Principal Cities

IMAGINE!

PROVIDES FASTER, EFFORTLESS, MONEY-SAVING LIFTING

No plant can afford to be without these time-saving electric hoists. Even when used only a few minutes a day, they pay for themselves in a very few months. Workers like them, too, because they make it so easy to handle back-breaking loads.

To install a Whiting hoist, simply hang it up, plug it into the nearest outlet and it's ready for use. One man can install it without help, yet it's plenty rugged for heavy-duty jobs.

3 SIZES
¼, ½, and 1-TON

If It Saves One Man Only 12 Minutes a Day . . . It Pays a Profit!

Write for Bulletin H-100A

WHITING CORPORATION
15659 Lathrop Ave., Harvey, Ill.

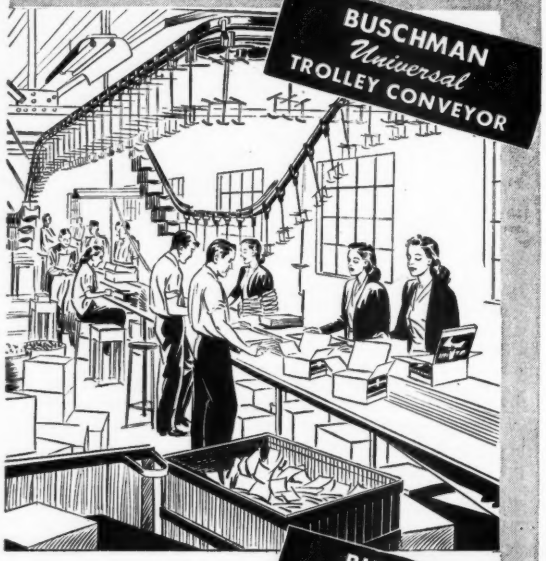
☐ Send me a copy of your Bulletin H-100A.
☐ Send me the name of the Whiting distributor in my locality.

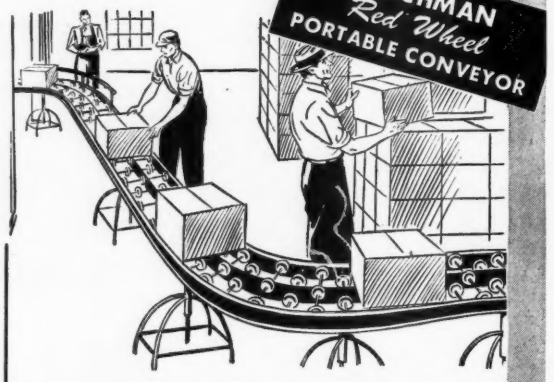
NAME_____

STREET ADDRESS_____

CITY_____ STATE_____

GET YOUR HAND OUT OF HANDLING





Costs come down when you install Buschman Universal Cable Type Trolley Conveyors overhead. At the same time save valuable space for production, assembly and storage. Floor or ceiling mounted in one plane or with dips from floor to floor. Simple field installation. No welding required. Write for bulletin No. 40.
Lower view shows Buschman "Red Wheel" portable conveyors. They are adjustable to your needs . . . in convenient sections and curves . . . easy to set up, easy to change. Write for Bulletin 10. Agents in Principal Cities.

THE E. W. BUSCHMAN CO., INC.
WINTON PLACE, CINCINNATI 32, OHIO

Buschman
REPRESENTATIVES IN PRINCIPAL CITIES

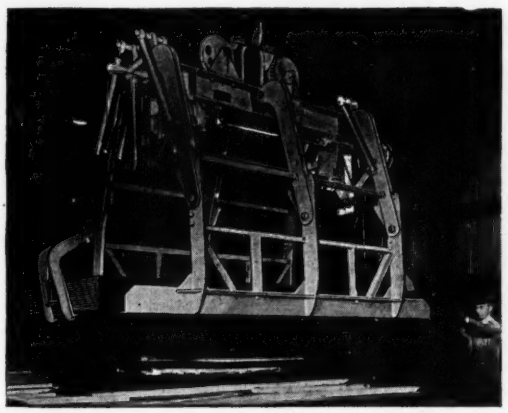
ON THE PALLET . . .

(Continued from page 52)

ground—before it's too late," he declared. He contended sound prosperity depends upon production, not on prices or wages. "I'd be the last person to condemn high wages, provided they were accompanied by high production," he said. "I believe labor should get what it earns, but that the only fair yardstick for labor's earning power is production. If a person does not earn what he gets, somebody else does not get what he earns."

LIGHT weight and streamlined design are outstanding features of Pratt, Read & Co.'s new portable "K" piano, a 64-key instrument which weighs only 80 pounds. The light weight is explained by the use of magnesium in the string plate. Usually one of the weightiest items in piano construction, the string plate weighs several hundred pounds in the standard piano; the cast magnesium string plate of the "K" piano weigh 22 pounds.

THE volume of Westinghouse Electric Corporation's production in October shattered all previous peacetime records and was said to require the equivalent of a 53-mile-long freight train to ship this output of industrial and consumers' goods throughout the nation. In quantity or weight of units, this single month's output would fill 5,835 average size freight cars.



You can produce only as much as you can handle

WHEN you use C-F Sheet Lifters to load, carry and unload loose or bundled sheets in and out of storage, you keep no machine or operator idle, waiting for material.

C-F Lifters provide a faster, safer and more economical method of handling sheet stock because they carry more sheets per load, have a tong action that grips loads tightly, preventing stock slippage or sag, yet design features such as wide bearing surfaces give full protection to stock edges. One man end or remote cab control keeps operator away from sides—stock can be loaded or unloaded in close quarters with resulting savings in storage room.

Jaw controlling mechanism provides infinite adjustments from minimum to maximum widths. Control is fast, positive. C-F Lifters have standard and optional equipment that will exactly meet any materials handling requirements you may have. Lifters are available in capacities from 2 to 60 tons or larger, in standard or semi-special designs. Write for new illustrated Bulletin—just off the press.

CULLEN-FRIESTEDT CO., CHICAGO 23, ILL.

1320 South Kilbourn Avenue Chicago, Illinois

USE THE IRONBOUND

SHORT-HAUL SYSTEM

TO SPEED PRODUCTION AND MINIMIZE EFFORT

● The Ironbound 'Short-Haul' skid is constructed from new billet steel and carefully selected hardwoods. Assembly is bolted and welded. It will carry loads up to 2500 pounds with absolute safety. A 'Short-Haul' system, properly planned, can greatly simplify moving tasks. The area of one unit will adequately store many immobilized units.

Immediately Available in these Sizes

SEMI-LIVE SKIDS	
EWL—17	24 x 36
EWL—17	24 x 48
EWL—17	30 x 42
EWL—17	30 x 48
EWL—17	36 x 48
EWL—37	36 x 60
EWL—37	36 x 72

LIFT JACKS	
S—73	7 x 3 Semi-Steel Wheels
R—72	7 x 2 Rubber Tired Wheels
R—73	7 x 3 Rubber Tired Wheels

Ironbound engineers, located in principle cities, will be glad to make materials handling recommendations for speeding production and handling unusual loads.

IRONBOUND

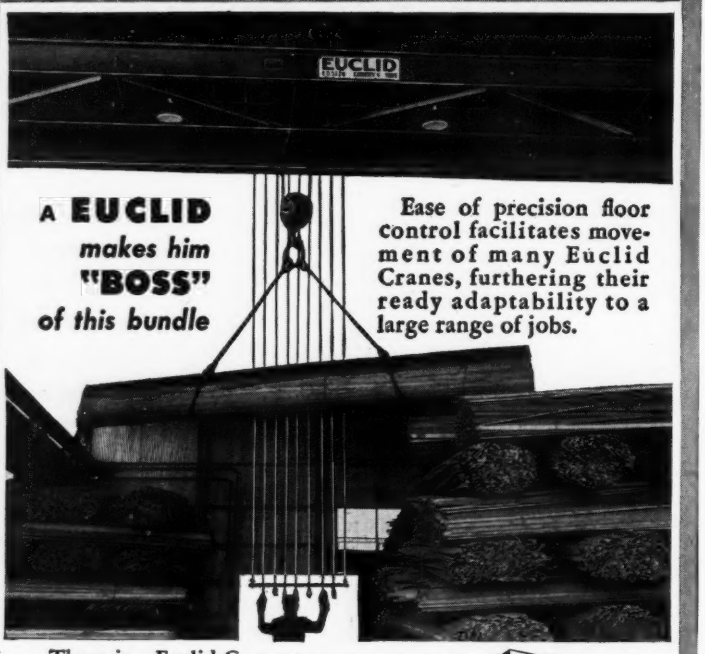
BOX & LUMBER COMPANY

Materials Handling Division

30 HOFFMAN PLACE • HILLSIDE, N. J.

Ironbound

SEMI-LIVE SKIDS
SKIDS • DOLLIES
FLOOR TRUCKS



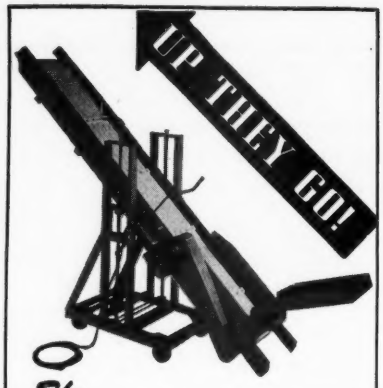
A **EUCLID** *makes him* **"BOSS"** *of this bundle*

Ease of precision floor control facilitates movement of many Euclid Cranes, furthering their ready adaptability to a large range of jobs.

There is a Euclid Crane to meet your most exacting standards. Write today for the latest catalog.

THE EUCLID CRANE & HOIST COMPANY
1362 CHARDON ROAD, EUCLID, OHIO

EUCLID CRANES AND HOISTS
Raise Profits



The
"LITTLE HUSTLER"
TRANSFERS STAMPINGS AS FAST AS PRODUCED!

The "Little Hustler" is fully portable and quickly adjustable to a wide range of applications. The 8 foot size shown above has a maximum delivery height of 81 inches at 45° and 50 inches in a horizontal position. Made in 13 models: 4-6-8-10 and 12 ft. long, by 12", 18" or 24" wide. Also special sizes. Send for circular LHC. We design and manufacture permanent conveyor systems and all types of SPECIAL EQUIPMENT.

MAY-FRAN ENGINEERING, INC.
Development Engineering and Manufacturing
1710 Clarkstone Rd. Cleveland, Ohio

FIG. 16-24 Two-Wheel Trucks for Every Use

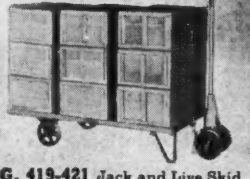
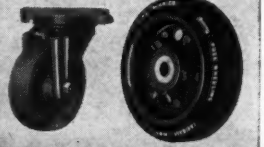


FIG. 419-421 Jack and Live Skid



Casters, All Types, Light, Medium, Heavy Duty — Wheels with Demountable Rubber Tires

Ask Nutting Engineers

FOR ADVICE ON MATERIALS HANDLING

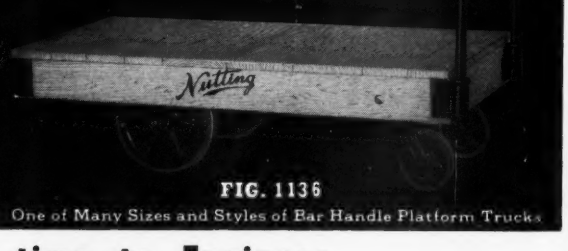


FIG. 1136
One of Many Sizes and Styles of Bar Handle Platform Trucks

NOW is the time to Engineer your Materials Handling

Your materials handling system needs to be just as carefully planned and engineered as your production set-up, or the design of your products. A planned layout may well be the difference between profit and loss, between smooth-flowing operation and a time-wasting series of bottlenecks. Take advantage of the seasoned experience and valuable advice of a Nutting Engineer. Because the all-around adaptability and versatility of Nutting Trucks has never been excelled, he can advise you on the proper use of trucks with overhead or floor conveyors . . . assembly or production line use . . . interdepartmental use . . . warehouse or shipping room use . . . as well as situations where only trucks should be used.

LOOK in *your Classified Telephone Directory* to contact your nearest Nutting Sales Engineer, or write to us direct. Ask for Bulletin 48-G.

Over 1000 Nutting Designs

56 years of specialized, continuous experience in building materials handling equipment is embodied in the Nutting line for your benefit. We supply every need in floor trucks, casters, wheels—including specially designed trucks for specific needs.

NUTTING TRUCK & CASTER COMPANY

our 57th *Year*

1602 DIVISION STREET WEST, FARIBAULT, MINNESOTA

NEWS Sales FROM THE FIELD

GEORGE M. PRESCOTT CO., Los Angeles: Appointment of J. E. Badgley, secretary-treasurer of the Material Handling Assn. of Southern California, as sales manager of its materials handling equipment division has been announced. In this capacity he will direct sales in Southern California of materials handling equipment for Crescent Truck Co., Lift Trucks, Inc., American Pulley Co., Material Movement Industries, Inc., Ironbound Box & Lumber Co., E. W. Buschman Co., Hamilton Caster & Mfg. Co., Truscon Steel Company and others.

J. E. Badgley

MILL & FACTORY SUPPLY CO., 317 Tenth St., Toledo, O.; H. E. FORTNA & BRO., 1200 Oley St., Reading Pa.; TENNESSEE MILL & MINE SUPPLY CO., Knoxville, Tenn.; BARD STEEL AND MILL SUPPLY CO., 251 N. Edwards St., Kalamazoo, Mich.; MIAMI PARTS & SPRING CO., INC., 35-99 Northwest Fourth St., Miami, Fla.; BRYANT MACHINERY & ENGINEERING CO., 400 West Madison St., Chicago; LARSON EQUIPMENT CO., 62 Main St., Buffalo, N. Y.; CHARLES C. LEWIS CO., 401 Liberty St., Springfield, Mass., and CHARLES A. STRELINGER CO., 149 East Larned St., Detroit, have been appointed by Market Forge Co. as stocking distributors in their respective cities and surrounding areas.

BONNER & BARNEWALL, INC., 92 Bleecker St., New York: Appointment of the company as a distributor in the New York area has been announced by New York Belting and Packing Co. J. Allan Machin, vice president, will supervise distribution of belting, hose, packing and other industrial products.

REVOLVATOR GO-GETTER POWER LIFTRUCK

Skid Platform type illustrated. Pallet and High Lift models also available.

HIT OF THE SHOW!

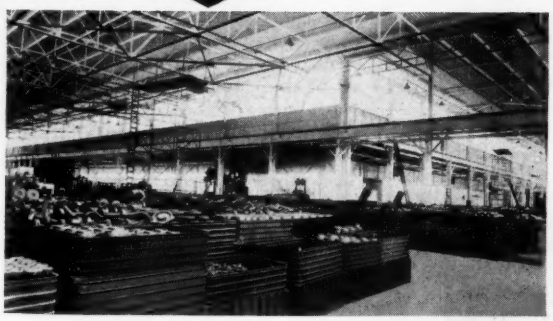
At the great Material Handling Exposition in Cleveland our new REVOLVATOR (Reg. U.S. Pat. Off.) GO-GETTER POWER LIFTRUCK had all the answers. Here are a few of them:

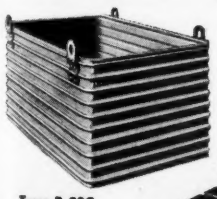
FINGER TOUCH SINGLE LEVER DIRECTIONAL CONTROL
DELAYED ACTION SPEED CONTROLLER
DIRECTIONAL LIFT CONTROL
SPRING BALANCED NON-KICKING STEERING HANDLE
LARGE DUAL DIFFERENTIAL DRIVEN WHEELS
SUPERIOR MANEUVERABILITY AND STABILITY
MAXIMUM SAFETY
POWER TRACTION AXLE AND HYDRAULIC LIFT
ADJUSTABLE TIMKEN BEARINGS
HEAVY DUTY TRACTION TYPE MOTOR

Only the GO-GETTER can give you all these important features. Write for complete details.

REVOLVATOR CO.
DESIGNERS AND MANUFACTURERS OF MATERIAL HANDLING EQUIPMENT
8739 Tonnele Ave. North Bergen, N. J.
Since 1904

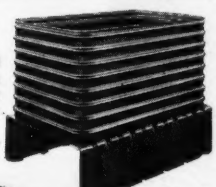
AN AUTOMOTIVE PARTS MANUFACTURER **uses Truscon Steel Boxes and Skids** ***for efficient flow in modern materials handling***

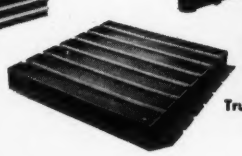




Type B-80C Truscon Box Equipped for Crane Handling

Type PB-120 Truscon Steel Box and Platform





Truscon Double Face Steel Pallet

● One of the nation's foremost producers of automotive power transmission equipment uses Truscon material handling units to assure efficient and economical transportation and storage of thousands of parts and finished products.

Do your materials handling methods present the neat, orderly scene shown in the plant at the left? The jumbled, helter-skelter handling and storage of materials, parts and finished products has no place in today's efficiency plan for profits. The slow piece-by-piece handling and moving of materials in any step of your manufacturing process, from raw materials to finished product, is costly throughout the day. Truscon has field men who have helped solve many materials handling problems, and can be of helpful assistance to you.

TRUSCON STEEL COMPANY
PRESSED STEEL DIVISION
6202 Truscon Avenue • Cleveland 4, Ohio
Subsidiary of Republic Steel Corporation

Write for descriptive catalog on Truscon Steel Boxes and Steel Skids.

GLASS HANDLING . . .

(Continued from page 30)

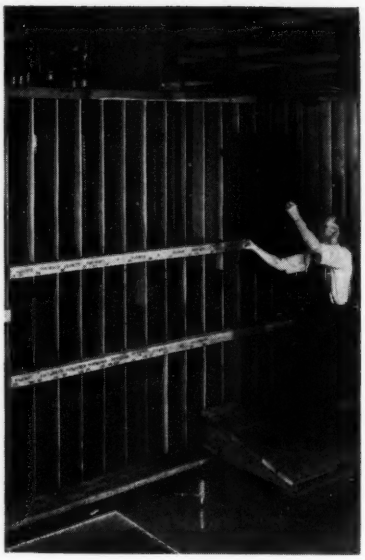
high bay area. This system of storing eliminates movement of the huge pieces through the narrow aisles for long distances.

A conveyorized grinding machine for finishing the edges of glass is located close to the racks.

Rough and Window Glass

Rough glass and window "lights" (panes) are received chiefly by highway carriers. They are packed in crates and chipboard boxes. Hoist handling of crates has been previously described.

Rough glass is uncrated and stored in bins next to the cutting table. The bins are two and three rows high, with each compartment measuring 8½ inches wide and 132 inches deep. Height is determined by the width of the pane. Maplewood bases of the sections are waxed to provide an easy sliding surface for withdrawal of the glass. Popular sizes are stocked in the most accessible position.



BULK STORAGE. Individual compartments for each type of glass reduces handling time.

Standard size window lights are received in chipboard containers. They are stored in the same condition because glass is wholesaled in standard multiples.

Packaged glass is unloaded from vehicles at the depressed dock to a pallet for fork lift truck handling. In storage, stacking is facilitated by keeping the top of the load on a level with the pile. The stacks are built eight feet high.

It is interesting to note that unloading of material at the customer's address has been given the same thorough planning as in-plant handling. A single post hydraulic hoist is installed at the tail gate of one of the delivery trucks. It is used for unloading at the delivery point as well as loading the truck away from the plant. Thus, unnecessary handling has been eliminated at both loading and unloading points and the company has been able to make maximum use of its delivery equipment.

Processing Mirrors

Processing of mirrors, another important function, takes place at the far west end of the plant. Here, again, good handling is practiced by use of dollies and specially designed glass trucks. Pallets of glass

IF YOU HANDLE

BOXES
CASES
BARRELS
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CRATES
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BAR STEEL
ROLLED STEEL
FORMS
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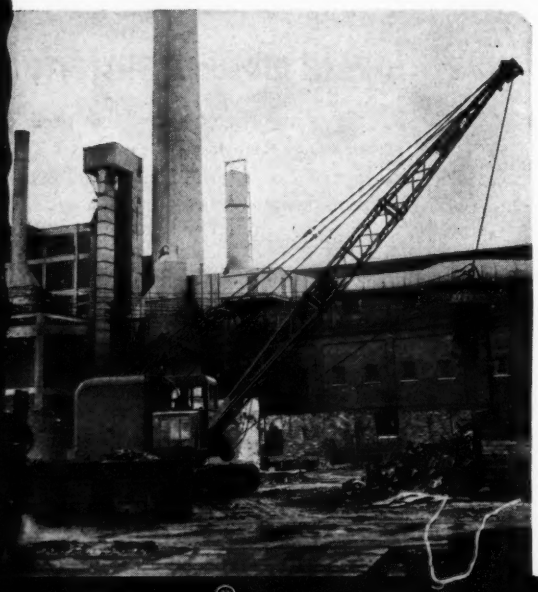
Then a LORAIN will pay its way plus a *Profit*



ONE Lorain crane, using such attachments as hook, sling, grapple, clamshell or dragline bucket, electric magnet will handle any or all of these jobs at a saving in time and money—and release valuable manpower for other work. It will go anywhere, do anything and is a tireless worker whose efficiency never varies around the clock.

Lorain cranes are available as crawler units or with highly mobile rubber-tire mountings (self-propelled or two-engine types). Your local Thew-Lorain distributor can supply complete information. Call him today!

THE THEW SHOVEL COMPANY
LORAIN, OHIO

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DRAGLINES • MOTO-CRANES

are placed in ovens for baking after silvering.

Metal accessories for plate glass in store front work are segregated in a small section of the southwest portion of the building. These are stored by lengths on wood shelves to avoid scratches. These shelves are identified with code numbers and reach almost to the ceiling.

By planning the production layout around up-to-date material handling equipment, maximum efficiency in operations has resulted. Not only has this company eliminated wasted manhours by planned layout but it has proven that a fragile item can be handled by modern methods.

PACKAGING EXPOSITION . . .

(Continued from page 32)

C. F. Manning, vice president, Reynolds Metals Co., Richmond, Virginia.

E. J. Marsh, secretary-treasurer, Marsh Stencil Machine Co., Belleville, Ill.; Paul Meelfeld, manager, Advertising & Sales Promotion, The Hinde & Dauch Paper Co., Sandusky, O.; Tom Miller, vice president, sales, Packaging Machinery Co., East Longmeadow, Mass.; K. M. Peterson, advertising manager, Pneumatic Scale Corp., Ltd, North Quincy, Mass.; L. L. Pilliod, sales manager, Pilliod Cabinet Co., Swanton, O.

Paul Thompson, advertising and sales promotion manager, Sherman Paper Products Co., Newton Upper Falls, Mass.; James Turnbull, general sales manager, Plastics Division, Monsanto Chemical Co., Springfield, Mass.; Mills W. Waggoner, Better Packages, Shelton, Conn.; Richard Wellbrock, sales manager, New Jersey Machine Corp., Hoboken, N. J.; Ben M. Williams, manager, sales promotion, Gaylord Container Corp., St. Louis.

This is the first time in four years that the AMA Packaging Exposition is being held in the Midwestern area. Officials indicated the alternating schedule between the Eastern area and Midwest will again be resumed after this year. The 1949 show has been scheduled for Atlantic City.

Something to shout about!

A fellow can't help getting excited about this amazing new portable, reversible, power belt conveyor. Slick as tomorrow's convertible, the New Stevedore, Jr. adjusts to

A New High and a New Low

Up to 82" and still down to earth at the receiving end for easy loading. On a level, a range of 18¾" to 64¾". And adjustment is

Simple As Winding Your Watch

Accomplished with an easy-going, good-natured crank. The positive screw and bevel gear mechanism keeps it where you want it. It has

New Rugged Strength

The man-size cross braced channel steel frame gives it bridge-like stability. Streamlined, too...no sharp corners to damage load.

And Greater Capacity Has Been Added

With the oversize Ruff-Top 10" and 16" belts (25% wider) you can handle larger cartons and bags. What's more...the New Stevedore, Jr. has

New Adaptability

Frame can be shortened or lengthened by installing sections of different lengths. And for men and materials there's

New Safety

The full length guard rails on both sides add extra protection.

Yes, you'll shout about it, too, when you read the full story. You'll see that Rapids-Standard has again written a new chapter in conveyor history. Write for the full details.

THE RAPIDS-STANDARD CO., INC.
377 Rapistan Bldg., Grand Rapids 2, Michigan
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MATERIAL HANDLING EQUIPMENT

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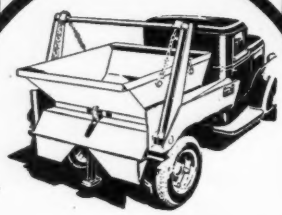

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A new departure in the sale of lift trucks and especially in the disposal of war surplus by a private dealer is announced by Harry M. Righter, Inc., Cleveland dealer in Government surplus lift trucks and materials handling equipment. The auction sale will take place at the foot of W. 45th St., Cleveland, to dispose of some of the stock to make warehouse space for large pieces of construction equipment arriving now. Righter is placing approximately 100 pieces on the block with an approximate value of a quarter million dollars.

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JUST WHAT YOU'VE BEEN LOOKING FOR

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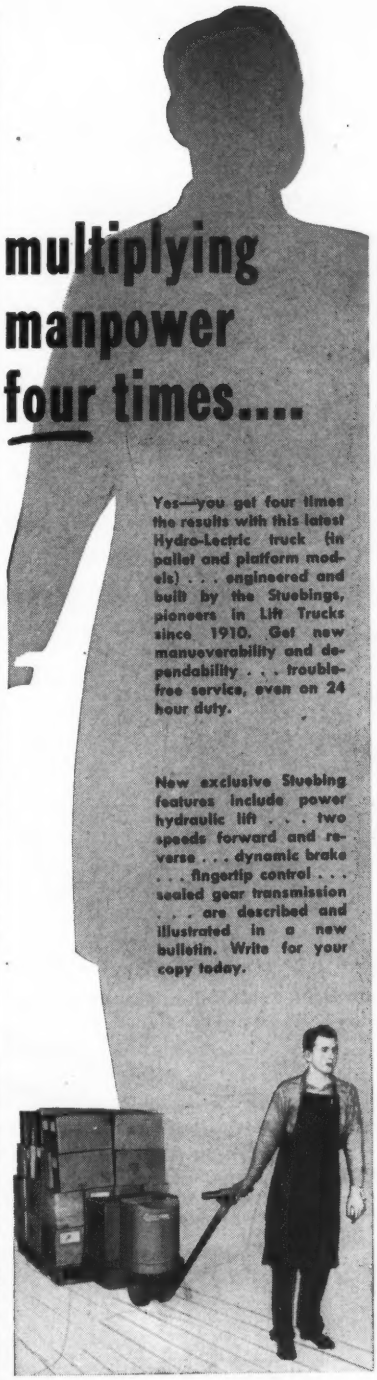
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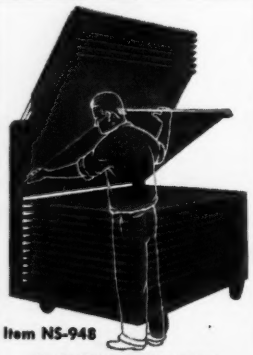

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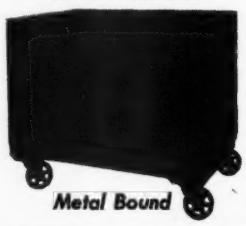

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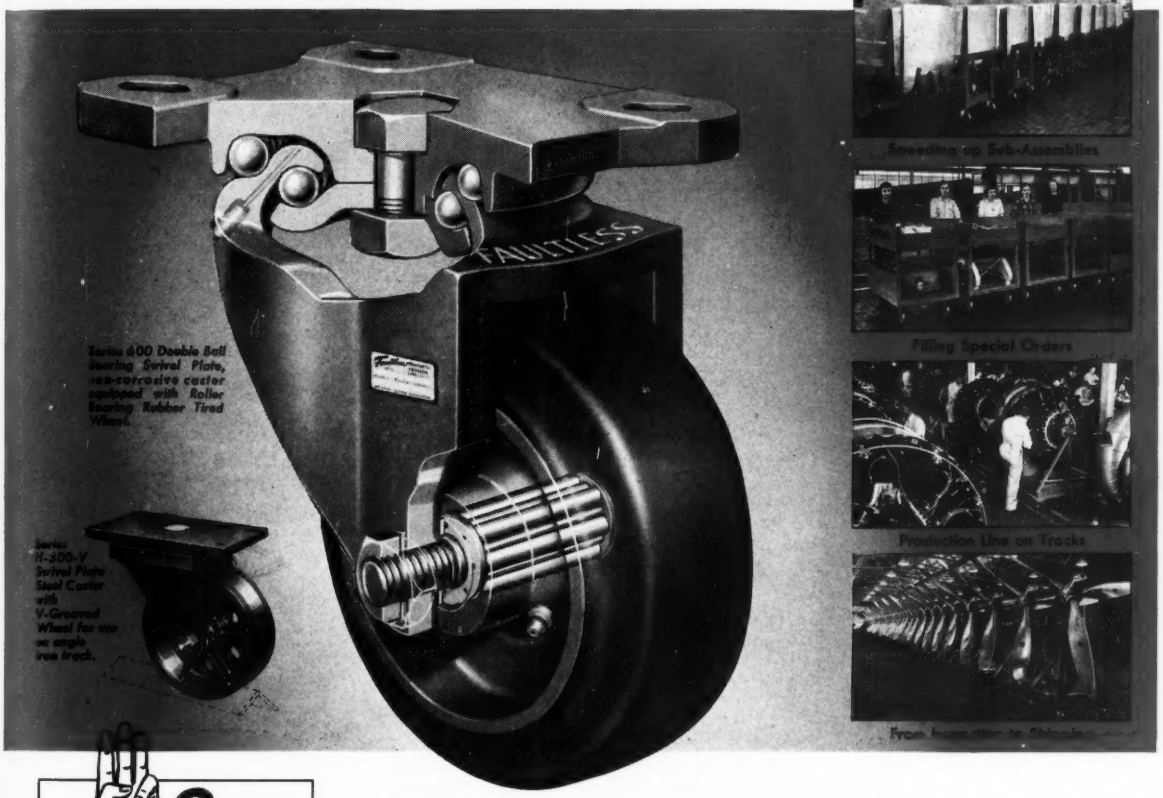
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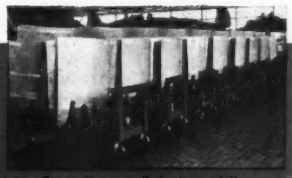
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